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BIKEWAY MASTER PLAN



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City of Folsom

Bikeway Master Plan

ADOPTED

April 13, 1999

RESOLUTION # 5984

Prepared By:

**Alta Transportation Consulting
Fehr & Peers Associates, Inc.**

Prepared For:

City of Folsom Parks and Recreation Department

**50 Natoma Street
Folsom, CA 95630
(916) 355-7304**

Acknowledgments

City Council

Steve Miklos	Mayor
Reggie Drew	Vice Mayor
Tom Aceituno	Councilmember
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<i>Bob Holderness</i>	<i>Former Councilmember</i>
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Will Kempton	
Phil Scott	
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<i>Barbara Leary</i>	<i>Former Commissioner</i>
<i>Don Bergst</i>	<i>Former Commissioner</i>

Master Plan Advisory Committee (MPAC)

Deanne Kordakis	Rick LeFlore
Dan Shoeman	Art Smith
John Ramirez	Joseph Gagliardi
Walt Seifert	Darrell Singleton
Jim Kristein	Neil Kelly
Sue Teranishi	Barbara Leary
Carol O'Callaghan	

Project Manager and City Staff

Michael Frost	City Manager
Tarry Smith	Director Parks and Recreation Department
Jim Konopka	Parks & Recreation Department (<i>Project Manager</i>)
Gail Furness de Pardo	Planning Inspection & Permitting Department
Mark Rackovan	Public Works
Eric Weitzel	Police Department

Consultant Team

Michael G. Jones	Alta Consulting
Joshua S. Abrams	
Ron Milam	Fehr & Peers Associates, Inc.

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Why does Folsom need a Bicycle Master Plan?

Folsom enjoys one the finest settings of any smaller city in California, bisected by the American River, flanked by the Sierra Nevada to the east, and the state capitol to the west. Residents of the city have access to the foothills, mountains, rivers and creeks, and regional recreation resources such as Lake Natoma, Folsom Lake State Recreation Area, and Auburn State Recreation Area. The City is also a transportation hub, with U.S. 50 at the City's doorstep, and Folsom Boulevard, a major tourist route to Folsom Lake State Recreation Area. The City is connected to other regional centers by scheduled transit service provided by the Sacramento County Transit Authority (Regional Transit) and the Folsom Stageline Commuter Service. A regional airport is located in nearby Sacramento at the Sacramento International Airport.

Historically life and work in Folsom have centered around local employers such as the Folsom State Prison, with some commuting to Sacramento. In recent times the City has grown tremendously along with the entire Sacramento region. People move to Folsom seeking a less hectic lifestyle, or to find employment in Folsom's expanding job base. With the emergence of large scale commercial and service industries, smaller services and other employers, life in Folsom continues to change.

Why does Folsom need a Bicycle System Master Plan? One reason is the continuing growth of this residential community. Simply put, residents and visitors alike desire to get out of their cars and walk and bicycle on the quiet streets and in the historic downtown. In order to attract and extend the stay of visitors, the bicycling environment in Folsom must be enhanced.

Another reason is the enjoyment and quality of life for the residents of Folsom. Since bicycling is one of the most popular forms of recreational activity in the United States (with 46% of Americans bicycling for pleasure), we can assume that about 16,000 residents in Folsom like to bicycle purely for pleasure.

Safety is a primary reason to improve bicycling conditions in Folsom. Concerns about safety are the single greatest reason people don't commute by bicycle, according to a 1991 Lou Harris Poll. Addressing those concerns for bicyclists through physical and program improvements is another major objective of the Master Plan.



What are the Four Issues that Folsom must address to become a Bicycle Friendly City?

Safety, access, quality of life, and effective implementation are imperative elements for Folsom's success as a bicycle-friendly city.

Safety is the number one concern of citizens, whether they are avid or casual recreational cyclists or bicycle commuters. For the most part bicyclists can use back streets or off road facilities to avoid traffic in the city's most congested areas. However, a consistent bicycle network with either bike lanes or wider curb lanes and signing is generally lacking in the city. In many instances historic design decisions have been made to increase vehicular traffic capacity and speeds at the expense of bicyclists. The city has made excellent progress in its off road bike path system, and installing bike lanes on new streets as they are built.

Access for bicyclists to shopping, work, recreation, school, and other destinations is somewhat hampered by East Bidwell Street, Folsom Boulevard, and other major arterials. Movement across these streets is hampered by the sheer volume of traffic even at signalized intersections. Mid-block crossings on these streets, and especially the Rainbow Bridge and access to Old Town Folsom, continue to be a problem for bicyclists.

This Plan urges Folsom to take measurable steps toward the goal of improving every Folsom citizen's **Quality of Life**, creating a more sustainable environment, reducing traffic congestion, vehicle exhaust emissions, noise, and energy consumption. The importance of developing a bicycle system that is attractive and inviting is a key element in marketing Folsom as a city where people want to live, work, and visit. The attractiveness of the environment not only invites bicyclists to explore Folsom, but more importantly, a beautiful environment helps to improve everyone's positive feelings about the quality of life in Folsom.



Education, enforcement, engineering, and funding are the basic components of an **Effective Implementation** Program for this Master Plan. Education must be targeted to the bicyclist as well as to the motorist regarding the rights and responsibilities of the bicyclist, pedestrian, and automobile driver. Comprehensive enforcement of existing traffic and parking laws, coupled with the implementation of sound design and engineering principles for bike corridors is also critical. This plan also proposes systematic review of all new development projects, including public works efforts, to assure compliance with planning and building codes and the principles of this Master Plan. Finally, this plan proposes an aggressive strategy for obtaining grants and competing for other funding sources in order to realize the physical improvements identified as the highest priorities.

Expected Benefits of the Bicycle Master Plan

Improve Safety. Help reduce the accident rate for bicyclists through design standards and guidelines, education, and enforcement.

Provide needed facilities and services. Meet the demand and increased use of bicycles as a means of travel around the city. With a goal of doubling bicycling by 2010, the bicycle commute share would be about 2% or 230 bicycle commuters Citywide.

Improve the quality of life in Folsom. Design and build people-friendly streets, paths, trails, and activity centers available to everyone, and support sustainable community development. Reduce traffic congestion, vehicle exhaust emissions, noise and energy consumption. Encourage visitors to stop and enjoy Folsom on bicycle.

Maximize funding sources for implementation. Equip Folsom to successfully compete for state and federal funding, by meeting the requirements of the California Bicycle Transportation Act and the Transportation Equity Act (TEA 21).

Major Recommendations of the Bicycle Master Plan

Major recommendations of the Plan for the top bike projects to implemented in the short term (the next 5 years) include:

1. Enhancement to existing bicycle facilities (maintenance, consistency, gap closures, signal detectors, intersection and interchange treatments).
2. Completion of the Blue Ravine Bike Lanes, and the Humbug Willow Creek Trail.
3. Enhanced access to the new Historic Truss Bicycle Bridge and the new American River Bridge at Lake Natoma from the newly developing areas of Folsom.
4. A new East-West (PG&E) Trail.

5. Improved bicycle and pedestrian access to the East Lake Natoma and American River Bikeway trail systems.

In addition, the plan contains recommendations on completing a comprehensive bicycle system over the next 20 years plus programs such as education and marketing and support facilities such as bike racks and lockers.

1.0 Goals and Objectives

The Bikeways Master Plan has been created through the diligent efforts of the City and citizens interested in improving the Folsom bicycling environment. Without the sustained efforts of these people, this Plan would not have been conceived and written.

1.1 Relationship between this Plan and other Planning Efforts in Folsom

As an Element of the General Plan, the Bikeways Master Plan has the comprehensive scope and jurisdictional authority required to coordinate and guide the provision of all bicycle-related plans, programs, and projects. Many current planning efforts provide recommendations regarding one element or aspect of the bicycle networks; the task of the Folsom Bikeways Master Plan is to ensure compatibility of all of these blueprints, while attending to planning for areas of the City not already targeted by other studies. The studies or planning efforts listed below have been reviewed and consulted, studied for consistency, and where appropriate, folded into Folsom's Bikeways Master Plan:

City of Folsom Bikeway Master Plan (1994) (including Transportation and Circulation Element Policies)

The primary recommendations of the Plan include overcoming the gaps in the bikeway system caused by the American River and Lake Natoma, improve other gaps and sub-standard bikeways southeast of the City, and ensure that adequate bicycle facilities are constructed as part of new developments and roadways. Aside from identifying potential bike lanes as part of all future street standards (except local streets), the Plan emphasizes the development of a guidebook and map for pedestrians and bicyclists showing the location and type of trails, paths, and routes, and includes guidelines for pedestrian and bicycle use and safety. Other relevant sections include Transportation and Circulation Goals and Policies to (a) ensure the existing bicycle and pedestrian paths along the American River shall be preserved, (b) where on-street bikeways are not feasible, the City should provide for Class I off-street bikeways, and (c) the City should endeavor to provide routes paralleling the major arterial routes for long distance bicycle travel.

The Sacramento Area Council of Governments Regional Bikeway and Pedestrian Study (1994)

The 1994 SACOG Regional Bikeway and Pedestrian Study identifies the Humbug-Willow Creek Parkway Trail as a proposed long term bicycle and pedestrian project. The proposed parkway would provide a link from Lake Natoma to Folsom Lake and El Dorado County. Also included is a widening project for Folsom Boulevard from East Natoma Street to Blue Ravine Road in the year 2000, with proposed bike lanes from Riley Street to Sibley Street. Additional proposed projects are: the American River Bikeway Connection, the Historic Canal Bikeway, the South Lake Natoma Bike Trail, the Power Line Bikeway, the North-South Bikeway, and the Railroad Right-of-Way Bikeway.

Humbug Willow Creek Recreational Trail System Development Impact Fee Study (1994)

This plan identifies a brief overview of the financing strategy for the planning and construction of the passive recreational amenities envisioned for the Humbug Willow Creek Parkway. The pathway would have connections into Folsom at various locations including Riley St., East Bidwell St. and Oak Avenue Parkway.

1.2 Goals Of The Bicycle Master Plan

The following goals, policies, and actions are designed to supplement the existing policies in the 1994 Bikeways Master Plan. Goals provide the context for the specific policies and recommendations discussed in the Bikeways Master Plan. The goals provide the long-term vision and serve as the foundation of the plan. The goals are broad statements of purpose that do not provide details, but show the plan's direction and give overall guidance. Objectives provide more specific descriptions of the goal, while policy actions provide a bridge between general goals and actual implementation guidelines, which are provided in the Implementation chapters.

The following Goals and Objectives are intended to guide bicycle planning, design, and implementation. Note that each policy action that is addressed by or in this Plan is noted with a [P].

Goal 1.0 Planning

Plan for the development of bicycle facilities and programs as a viable alternative to the automobile.

Objective 1.0 Develop a tool to plan, design, implement, and maintain a bicycle infrastructure in Folsom.**Actions:**

- 1.1 Develop and adopt a Bikeways Master Plan which identifies existing and future needs, and provides specific recommendations for facilities and programs over the next 20 years.[P]
- 1.2 Update the Plan regularly (every two years, as required by SACOG)[P]
- 1.3 Ensure that the Plan is consistent with all existing City, regional, state, and federal policy documents, and encourage consistency between the Plan and other General Plan elements.[P]
- 1.4 Develop and maintain a Bikeways Master Plan that links residential developments with sources of employment, public open spaces, parks, schools, neighborhood shopping areas, the central commercial district, other major recreational destinations, and adjoining communities.[Transportation and Circulation Element]

- 1.5 Maximize coordination between Folsom and neighboring jurisdictions using a Bicycle Coordinator as a means to review and comment on issues of mutual concern.[P]

Goal 2.0 Community Involvement

Involve the Community in the Planning and Implementation of the Bikeways System.

Objective 2.0 Encourage public participation through local coordination with City staff.

Actions:

- 2.1 Identify a bicycle coordinator whose responsibility is to (a) provide support to the public, (b) act as a liaison to the City, (c) act as a liaison to local bicyclists, the media, and the community in general, (d) complete funding applications, and (e) provide inter-departmental coordination.[P]
- 2.2 Public involvement in the planning process should be maximized through workshops and other means, including the establishment of an on-going bicycle advisory committee.[P]
- 2.3 Build coalitions with businesses the bikeways system serves as well as local clubs and organizations.[P]

Goal 3.0 Opportunities

Utilize existing resources in Folsom.

Objective 3.0 Build upon the existing bikeway system and programs in Folsom.

Actions:

- 3.1 Identify existing and proposed bike paths, lanes, and routes, and develop a city-wide system to maximize use to the extent feasible.[P]
- 3.2 Encourage the use of existing natural and manmade corridors such as creeks, railroad corridors, and other corridors for future bike path alignments.[P]
- 3.3 Identify existing bicycle education programs and target future expansion as need warrants.[P]
- 3.4 Complete a multi-use pathway network along the Humbug-Willow Creek corridor, as identified by the Humbug-Willow Creek Recreational Trail System Development Impact Fee Study. [P]



Goal 4.0: Facility Design

Provide opportunities for all people in Folsom to ride to work or play.

Objective 4.0 **Develop a city-wide bikeways system which meets the needs of commuter and recreational users, helps reduce vehicle trips, and links residential neighborhoods with regional destinations.**

Actions:

- 4.1 Develop a commuter system which provides direct routes between residential neighborhoods and regional employment centers, multi-modal terminals, and schools.[P]
- 4.2 Develop a recreational system which uses lower traffic volume streets, off-street bike paths, and serves regional historic and natural destinations.[P]
- 4.3 Develop a city-wide system that is no further than one (1) mile from any residential neighborhood in Folsom, and provides opportunities for local connections to the city-wide system.[P]
- 4.4 Develop a bicycle network which balances the need for directness with concerns for safety and user convenience. Where needed, develop a dual system which serves both the experienced and inexperienced bicyclist, and separates bicyclists, pedestrians, and other recreational users.[P]
- 4.5 Consider opportunities for including bicycle lanes on collectors where width of the street, traffic volumes, and service to major activity centers are appropriate.[P]

- 4.6 Use and supplement design guidelines to outline development standards for bike lanes and paths to encourage a safe and inviting environment.[P]
- 4.7 Create connections between bike lanes, pedestrian nodes, and other transportation nodes.[P]
- 4.8 Develop criteria for installing traffic calming devices such as traffic roundabouts, channelization, pedestrian refuge islands, T-intersections, modified designs for travel lanes, and reduction in street widths where significant through traffic impacts on low density residential areas. These devices should only be installed where desired by residents and where a demonstrated need exists and where compatible with the access needs of emergency vehicles. Installation priority should consider equity between different neighborhoods.[Circulation Element]
- 4.9 Develop standards for bike lane consistency at intersections and interchanges.[P]
- 4.10 Pursue the development of bicycle boulevards in appropriate locations such as Old Town Folsom.

Goal 5.0: Multi-Modal Integration

Integrate Bicycles into other Alternative Modes

Objective 5.0 Maximize multi-modal connections to the bikeways system.

Actions:

- 5.1 Ensure that the city-wide system serves all multi-modal facilities in Folsom.[P]
- 5.2 Work with local and Regional Transit agencies to install bike lockers where possible, and to maintain bike racks on buses.[P]

Goal 6.0: Safety and Education

Maximize pedestrian and bicycle safety in Folsom.

Objective 6.0 Improve bicycle safety conditions in Folsom.

Actions:

- 6.1 Monitor bicycle-related accident levels annually, Identify problem areas and major causes and develop programs to address and target a reduction in bicycle accidents on a per capita basis over the next twenty (20) years.[P]
- 6.2 Develop a comprehensive bicycle education program that is taught to all school children in Folsom.[P]
- 6.3 Develop a system for identifying, evaluating, reporting and responding to maintenance and safety problems on the existing bikeways system.[P]

- 6.4 Incorporate bicycle safety curriculum into existing motorist education and training.[P]
- 6.5 Coordinate with the Folsom Police Department to determine strategies of education and enforcement.[P]

Goal 7.0 Phasing

Target Improvements for those Areas with the Highest Need and Benefit

Objective 7.0 Develop detailed and ranked improvements in the Bicycle Master Plan.

Actions:

- 7.1 Identify the top five (5) bicycle improvements to be completed in the short to mid term (Primary System) based on a variety of objective and subjective criteria, including number of activity centers served, closure of critical gaps, immediate safety hazards, existing bicycle use, and input from the public and staff.[P]
- 7.2 Develop detailed implementation information on each recommended segment, including length, classification, adjacent traffic volumes and speeds, environmental impact, activity centers served, cost, and overall feasibility.[P]
- 7.3 Develop prototype cross sections and plans for the design of bikeways that meet state and federal standards.[P]
- 7.4 Develop education and maintenance programs which may be adopted by local jurisdictions.[P]

Goal 8.0 Support Facilities and Programs

Maximize bicycling as a transportation mode in Folsom.

Objective 8.0 Develop a coordinated strategy to develop support facilities and programs in Folsom.

Actions:

- 8.1 Develop and update a bikeway map for public distribution that shows existing and recommended bicycle routes.[P]
- 8.2 Sponsor annual bicycle, running, and hiking events such as Bike to Work Day and adult safety courses in conjunction with regional efforts.[P]
- 8.3 Promote use of bicycles as a safe and convenient alternative mode of transportation.[P]
- 8.4 Update the current bicycle parking ordinance to provide consistent type and appropriately located bicycle parking to meet demand. Establish a Class System by which bicycle parking types will be defined.[P]

- 8.5 Develop a unique and distinctive logo for the Folsom Bikeways System and locate on citywide system along with appropriate directional and warning signs.

Goal 9.0 Funding

Maximize the amount of funding to implement the proposed bikeways system within a prudent budgetary plan.

Objective 9.0 Maximize the amount of state and federal funding for bicycle improvements that can be received by Folsom.

Actions:

- 9.1 Identify current regional, state, and federal funding programs, along with specific funding requirements and deadlines.[P]
- 9.2 Encourage multi-jurisdictional funding applications.[P]
- 9.3 Develop a prioritized list of improvements along with detailed cost estimates, and identify appropriate funding sources for each proposal.[P]
- 9.4 Include bicycle improvements in the City's Capital Improvement Plans.[P]
- 9.5 Adjust implementation costs and identify additional funding for the proposed path along the Humbug-Willow Creeks and support the connections to the pathway from the surrounding neighborhoods.[P]
- 9.6 Recommend bike improvements or a donation into a transportation improvement fund for all major residential development projects with 100 new dwelling units or more.[P]

Goal 10.0 Implementation and Maintenance

Implement the Proposed Bikeways System

Objective 10.0 Anticipate impacts of future developments and roadways along existing and proposed bicycle improvements.

Actions:

- 10.1 Examine the adopted land use element to determine areas of potential growth and development in the City. Be aware of development projects that are submitted for review and examine possible impacts these developments might have along existing and proposed bicycle corridors, and require dedication of land and reasonable participation in the development of the project when feasible.[P]
- 10.2 Develop policies for new developments which ensure that non-motorized user's needs are incorporated into new subdivisions, including providing access points to existing and proposed bicycle facilities, on--street bicycle facilities for bicyclists, and proper roadway crossings where new streets will cross existing and proposed bikeways.[P]

- 10.3 Work with Caltrans to provide safe effective bicycle facilities at freeway and American River crossings. In cases where new development would benefit from such facilities, the private development may be requested/required to participate in the cost of the facility.[P]
- 10.4 The City will create incentives for use of alternative modes of transportation during review of new development projects.[P]
- 10.5 Travel Demand Management (TDM) programs for employment sites of more than 20 employees, may be used as a condition of project approval to mitigate traffic impacts. Voluntary TDM programs for all employers should be encouraged.[Circulation Element]
- 10.6 Require all new developments to provide curb and sidewalks on both sides of the street, except where prohibited by topography or safety considerations. Attention to sidewalk and parkway improvements should be prioritized in the Capital Improvement Program.[Circulation Element]
- 10.7 Enforce existing requirements for property owners to properly maintain sidewalks on their property.[Circulation Element]

Goal 11.0 The American River and Lake Natoma Bikeway Systems

Provide bicycle connections to the American River and Lake Natoma Pathway Systems

Objective 11.0 Ensure the Completion of the American River Bikeway System

Actions:

- 11.1 Provide connectivity between the American River Bikeway System, Lake Natoma, Folsom Lake, Old Town, and adjacent residential neighborhoods where feasible.[P]
- 11.2 Ensure essential north/south connections as a part of the planned improvements for the Historic Truss Bicycle Bridge.[P]
- 11.3 Provide connections from on and off-road bicycle facilities to the American River and Lake Natoma Bikeway Systems.[P]

2.0 Existing Conditions

2.1 Methodology

The existing bikeways in Folsom were inventoried by performing field reconnaissance, conducting public workshops, consulting with City staff, and using current city data and maps.

2.2 Definition of Bikeways

Bikeways are described by Caltrans in Chapter 1000 of the Highway Design Manual as being one of three basic types (see Figure 1).

- **Class I Bike Path** A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.
- **Class II Bike Lane** Any portion of roadway designated for bicycle use and defined by pavement marking, curbs, signs or other traffic-control devices.
- **Class III Bike Route** A designated route through high demand corridors on existing streets and are usually shared with motor vehicles. Are indicated by periodic signs and do not require pavement markings.

Other types of unofficial bicycle facilities relevant to Folsom include:

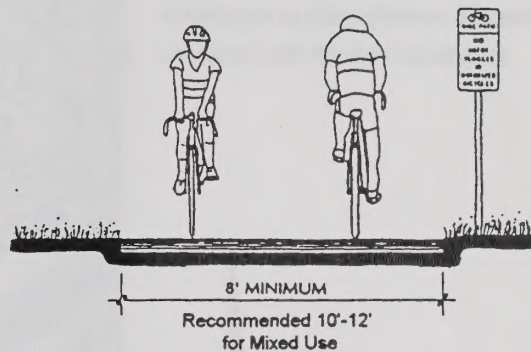
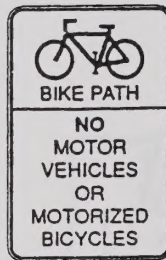
- **Shoulders** Where official bike lanes may not be feasible, enhanced shoulders with striping help to identify an area for bicyclists.

A map showing the existing bicycle facilities and constraints in Folsom is shown in Figure 2.

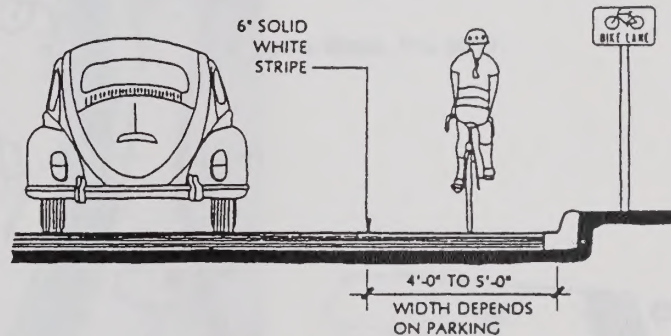
A list of the constraints identified by number is located in Appendix A.

A map showing the major attractions and support facilities is shown in Figure 3.

BIKE PATH



BIKE LANE



BIKE ROUTE

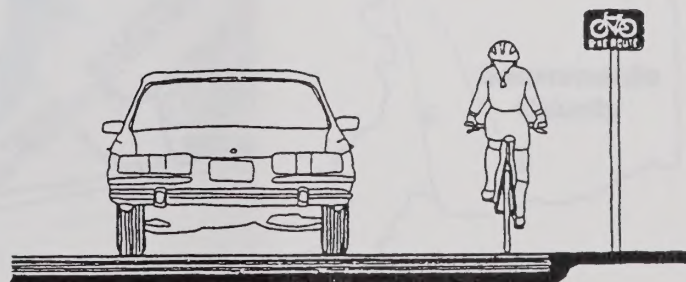


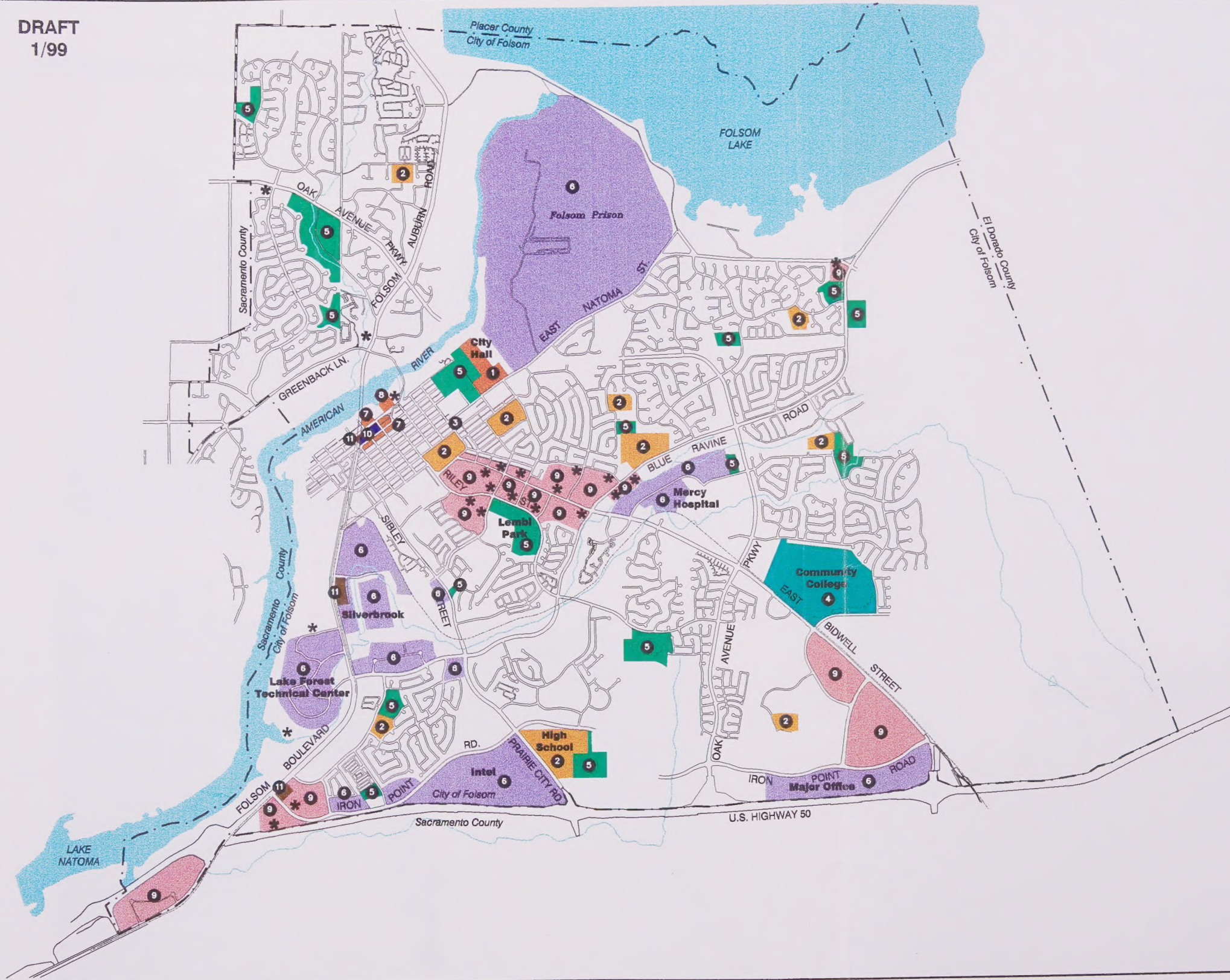
Figure 1: Bike Paths, Lanes, Routes



FIGURE 2

City of Folsom Bikeway Master Plan
EXISTING BIKEWAYS AND CONSTRAINTS

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LEGEND

- 1 - City Hall
- 2 - Public Schools
- 3 - Library
- 4 - Folsom Lake Community College
- 5 - Parks
- 6 - Major Employment Centers
- 7 - Historic Downtown Folsom
- 8 - Historic Power House
- 9 - Major Retail Centers
- 10 - Historic Railroad Block
- 11 - Light Rail Stations
- * - Existing Bicycle Parking



Approx. Scale: 1" = 4000'

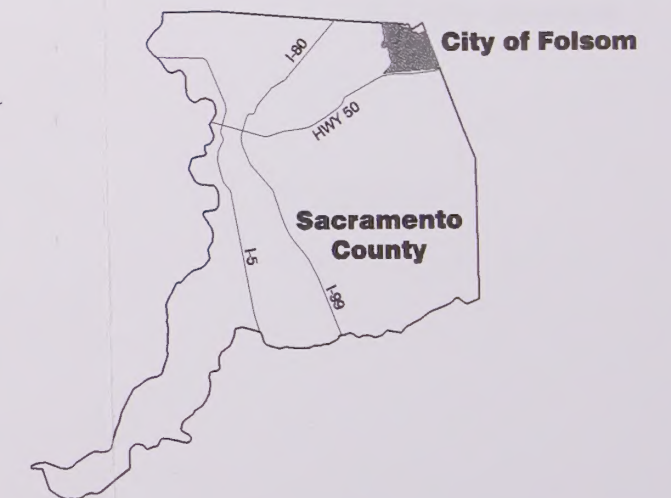


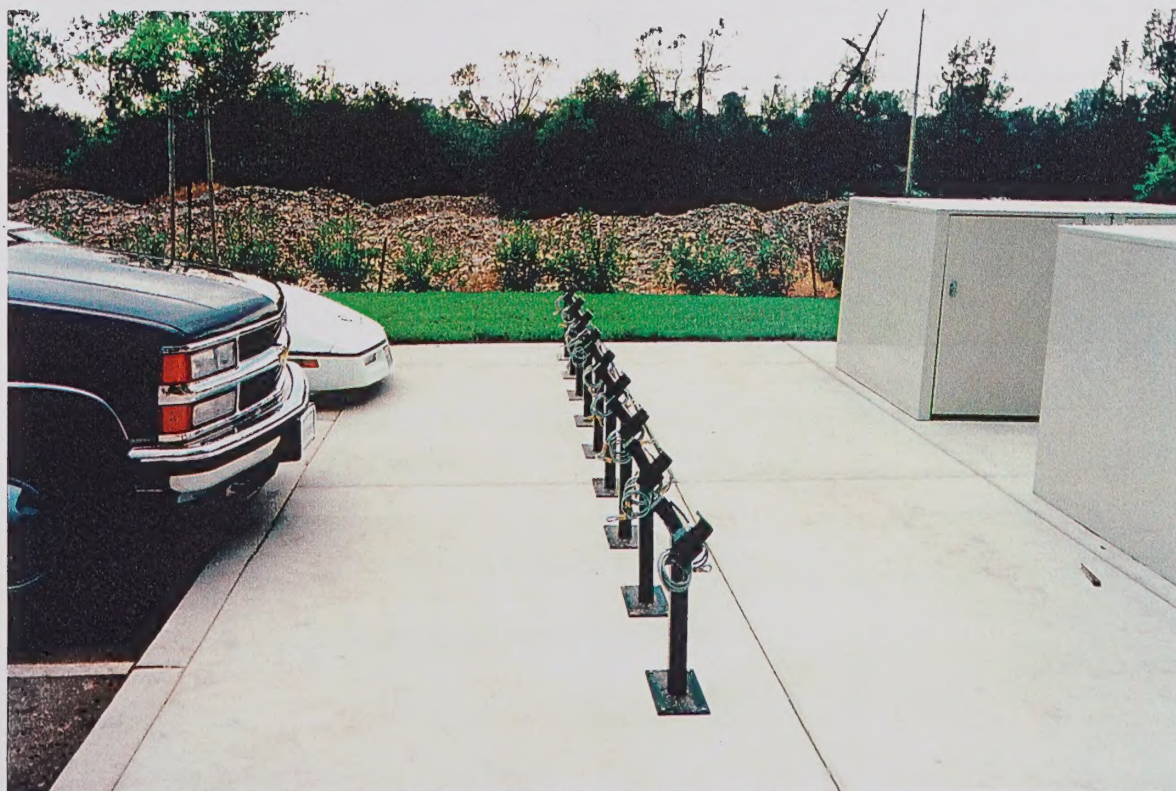
FIGURE 3

City of Folsom Bikeway Master Plan
MAJOR BICYCLE ATTRACTIONS AND SUPPORT FACILITIES



Photos

Existing bikeway facilities in Folsom include bike lanes and shoulder stripes (above) and bike racks and lockers (below).



2.3 Existing Bicycle Facilities

The following is a description of the existing Class I, II, and III bikeways listed by facility in alphabetical order.

Table 1 Existing Class I Bike Paths		
<i>Segment</i>	<i>Length (Miles)</i>	<i>Width¹ Standard (Y/N)</i>
American River Bikeway (State Parks)	6.5	Y
Baldwin Dam Trail	.75	N
City Park Trail	.5	Y
Broadstone Trail	1.37	Y
Humbug-Willow Creek Trail ²	1.56	Y
East Lake Natoma Trail	2	Y
Leidesdorff Street / Canal Path	.39	Y
Natoma Trail / East Natoma Street	.75	Y
Upper Alder Creek Trail	.32	Y
Folsom Parkway Rail Trail	.30	N
Total		14.14

¹ Standard width for Class I facilities in Folsom is 10' or greater.

² Section of trail from Sibley Street to Riley Street is 8' wide.

Table 2 Existing Class II Bike Lanes		
<i>Segment</i>	<i>Length (Miles)</i>	<i>Width^{3,4} Standard (Y/N)</i>
American River Canyon Drive (between Oak Avenue Parkway and Lake Natoma)	3.59	N
Blue Ravine Road (between Folsom Blvd. and East Natoma St.)	5.11	Y
Briggs Ranch Road (from Folsom Dam Road to East Natoma St.)	1.17	N
Creekside Drive (E. Bidwell St. to Oak Avenue Parkway)	.81	N
East Bidwell Street (Woodsmoke to Iron Point)	2	Y
Folsom Boulevard (between U.S. 50 and Sutter St.)	2.41	N
Folsom/Auburn Road (from Greenback Ln. to outside City limits)	2.17	Y
Glenn Drive (Sibley St. to Riley St.)	.85	Y
Greenback Lane (from outside the City limits to Riley St.)	1.19	Y
Grover Road (between Russi Rd. and Iron Point Rd.)	.41	Y
Ingersoll Way	.22	Y
Iron Point Road (between Folsom Blvd. and East Bidwell St.)	4.75	Y
Madison Avenue	.34	Y

³ Standard width for Class II bike lanes is 4' with no parking and 5' with parking.

⁴ Includes some sub-standard striped shoulders which are programed for improvement.

Manseau Drive (between Briggs Ranch Dr. and Blue Ravine Rd.)	.32	N
Natoma Station Drive (Folsom Blvd. to Turnpike Rd.)	.56	Y
Natoma Street	2.9	Y
North Lexington Drive (between Oak Avenue Parkway and Trowbridge)	.75	N
Oak Avenue Parkway (between Willow Creek and Iron Point Rd.)	2.43	N
Oak Avenue Parkway (Folsom-Auburn Rd. to City Limits)	1.13	Y
Prairie City Road/ Sibley Street (between Blue Ravine Rd. and U.S. 50)	1.18	N
Prewitt Drive (between North Lexington and Silberhorn)	.47	N
Riley Street (between Coloma and Oak Avenue Parkway)	1.9	N
Russi Road (between Blue Ravine and Riley)	1.03	Y
Siberhorn Drive (from Clarksville to	1.06	N
South Lexington Drive (from Oak Avenue Parkway to Siberhorn)	.81	N
Sutter Street	.28	N
Turnpike Drive (Natoma Station Dr. to Blue Ravine Rd.)	.85	N
Willow Creek Drive (Flower St. to Briggs Ranch Rd.)	.75	N
Total	41.44	

Table 3 Existing Class III Bike Routes	
<i>Segment</i>	<i>Length (Miles)</i>
East Bidwell (between Coloma and Wales)	.39
Total	.39

2.4 Current Conditions and Constraints

A lack of a completed bikeway system does not mean that people are not riding. The bicycling community--ranging from experienced club riders to school children- - has developed its own system of streets and routes which provide connectivity and safety for their purposes. Key observations on existing bicycling conditions include:

- Folsom is an ideal bicycling environment. The small size, mild climate, and topography provide opportunity for all residents to access many destinations by bicycle, whether they be for work or play. Local bicyclists include experienced adult riders and younger school children.
- Folsom Blvd. a major bicycle commuter route running north-south through the heart of the City is used by the local bicycling community and the regional cyclist taking longer rides through the region. Many of these cyclists stop in Folsom to access the many services offered along the route. Major routes for bicyclists include the American River Bikeway. Other major bicycle commuter routes in Folsom include Blue Ravine Road, Glenn Drive, Oak Avenue Parkway, Iron Point Road, Folsom-Auburn Road, Greenback Lane, East Natoma Street, and Prairie City Road.
- The streets in Old Town Folsom provide a relatively bicycle friendly area, with slower moving and lower traffic volumes. This could be supplemented by other improvements such as providing bike racks and lockers near popular destinations such as shops and restaurants.
- The Rainbow Bridge is prohibitive to cyclists because it causes a significant gap between the northern and southern portions of the City. The installation of the historic Truss Bicycle Bridge across Lake Natoma will provide an exclusive bicycle/pedestrian crossing and a safe alternative to the Rainbow Bridge.
- There is need for a comprehensive bicycle map to meet the needs of commuter and recreational cyclists.

- The lack of bicycle facilities on East Bidwell Street, a major east-west route represents a gap in the local system and creates a significant barrier to east-west travel.

Information on opportunities and constraints for bicyclists has come from a variety of sources including field observations. Many general and site specific problems have been collected, which help to form an idea of the type of system and specific improvements that will be required.

Comments can generally be summarized into the following statements:

Opportunities

- The City is currently working to complete several miles of off-road bikeways. The American River Bike Trail is an example of a regional Bike Path that when completed, will tie Folsom with downtown Sacramento.
- Completion of the Humbug-Willow Creek Parkway trail system will enhance connectivity closing many of the system-wide gaps, linking many of the City's residential, civic, commercial, and recreational locations for bicyclists.
- Folsom's largest employers and schools are serviced by bike facilities, and they are located within riding distance of virtually all other locations in Folsom. This presents an opportunity to maximize mode split.
- The construction of new residential developments in Folsom creates an opportunity to complete a comprehensive network of on street bike lanes.
- Regional connections to off-road bikeways including the American River and Lake Natoma Bikeways, and on-street connections to Folsom Boulevard, Green Valley Road, and Folsom-Auburn Road make Folsom a *cycling hub*.
- As a smaller city at the cross roads of several transportation corridors--including the major route leading to Folsom Lake and Lake Tahoe --the city has the opportunity to attract visitors to stop and visit while en route to other destinations.
- The City has a good base of existing Class I facilities that are close to most neighborhoods, and offer the safety of off-road bicycling as well as views of Folsom and its surroundings.
- The City's parks and community center serve as major destinations to residents, especially children who have the opportunity to ride their bicycles to events from most neighborhoods.
- Folsom has many opportunities for recreational riding on off-street trails. Plans for the development of future off-street trails are sure to enhance the City's appeal to residents and visitors alike.

Constraints

- Key portions of the City's bikeways system are not complete. An example is East Bidwell Street, a major east-west route. Connectivity to destinations such as schools and parks is limited making commuting by bicycle an inconvenience, forcing school children to use city streets, and leaving recreationalists with inconsistent facilities.
- Inconsistent facilities are a problem for experienced and casual riders.
- Cyclists complain of the lack of facility maintenance.
- The Rainbow Bridge, crossing the American River Canyon is a major constraint for bicyclists attempting to cross town. The bridge is narrow and has heavy traffic, making it difficult for cyclists to negotiate. The Bridge creates a significant gap between the northern and southern portions of town.
- Blue Ravine Road (from Sibley Street to E. Bidwell Street) is difficult for cyclists to negotiate due to high speed auto traffic along this corridor.
- Glenn Drive (from E. Bidwell Street to Sibley Street) a common bicycle route, has narrow shoulders (approximately one foot of asphalt) often forcing cyclists into the roadway.
- Iron Point Road creates a barrier for two major off-road trails. One of these trails in Willow Springs is blocked from accessing Willow Hills Reservoir and Folsom High School on the south side of Iron Point Road.
- US 50 interchanges do not include consistent bicycle facilities. The gaps created by interchanges create barriers to on street facilities at; East Bidwell Street, Prairie City Road, and Folsom Boulevard. The Class I Alder Creek Trail crossing is also obstructed in two freeway locations.
- Off-road access to the East Lake Natoma Trail from Blue Ravine Road is obstructed by Folsom Boulevard.
- The connection from Prairie Oaks across Blue Ravine Road to the Humbug-Willow Creek Trail system is difficult for cyclists to negotiate.
- There are no bike lanes or routes in the Historic District.
- Cyclists complain that Folsom's green lights are not bicycle sensitive and that signal lengths are too short for a bicycle to travel safely through intersections while making left turns.
- Like streets in all cities and towns, there is debris and gravel thrown by vehicles onto the right side of streets occasionally forcing bicyclists to ride in travel lanes.

- Crossing Folsom-Auburn Road to access the existing entry point to the American River Bikeway from Berry Creek Drive is difficult due to traffic volumes and speeds.

The above list represents a summary and sample of opportunities and constraints in Folsom, and can be updated as part of future plan revisions.

2.5 Bicycle Parking Facilities

Bicycle parking facilities are classified as follows:

- **Class I:** Class 1 bicycle parking facilities consist of bicycle lockers, or a secure area that may be accessed only by bicyclists.
- **Class II:** Class 2 bicycle parking facilities are bicycle racks which provide support for the bicycle but do not have locking mechanisms.

Typically, Class I facilities are located at large employment centers, and transit facilities. Typically, Class II facilities are located at schools, commercial locations, and activity centers such as; parks, libraries, retail locations, and civic centers.

Please see Insert A for an inventory of the City's existing bicycle parking rack types. The locations of the City's existing bicycle parking facilities is shown in Figure 3 (page 16). A sample copy of a comprehensive bicycle parking ordinance is located in Appendix B. Figures 4 and 5 illustrate the recommended Class I (bike locker) and Class II (bike rack) configurations.

Existing Class II Bicycle Rack Types

Style A



Style E



Style B



Style F



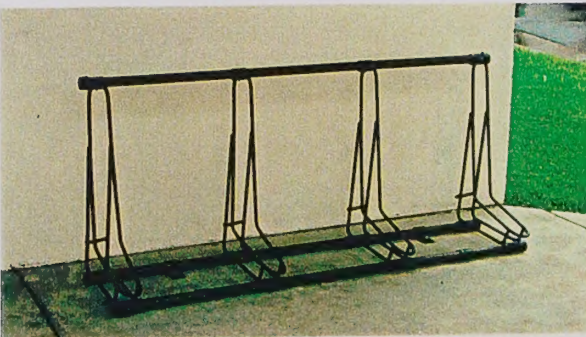
Style C



Style G



Style D



Style H



An inventory of Class I and II bicycle parking was conducted by the City in August, 1998. The inventory was categorized by nine (9) styles as shown in the photographs on the following page. The inventory revealed a total of 450 total bicycle spaces in racks, and 6 bike lockers holding 12 bicycles.

Table 4 Bicycle Parking by Type	
<i>Type</i>	<i>Total Bicycle Capacity</i>
A	184
B	120
C	12
D	10
E	11
F	26
G	9
H	20
Miscellaneous	58
Lockers	12

The largest concentration of bicycle parking was identified on the Riley Street and East Bidwell Street corridors between Blue Ravine Road and Coloma Street, which includes a large concentration of schools, businesses, and parks.

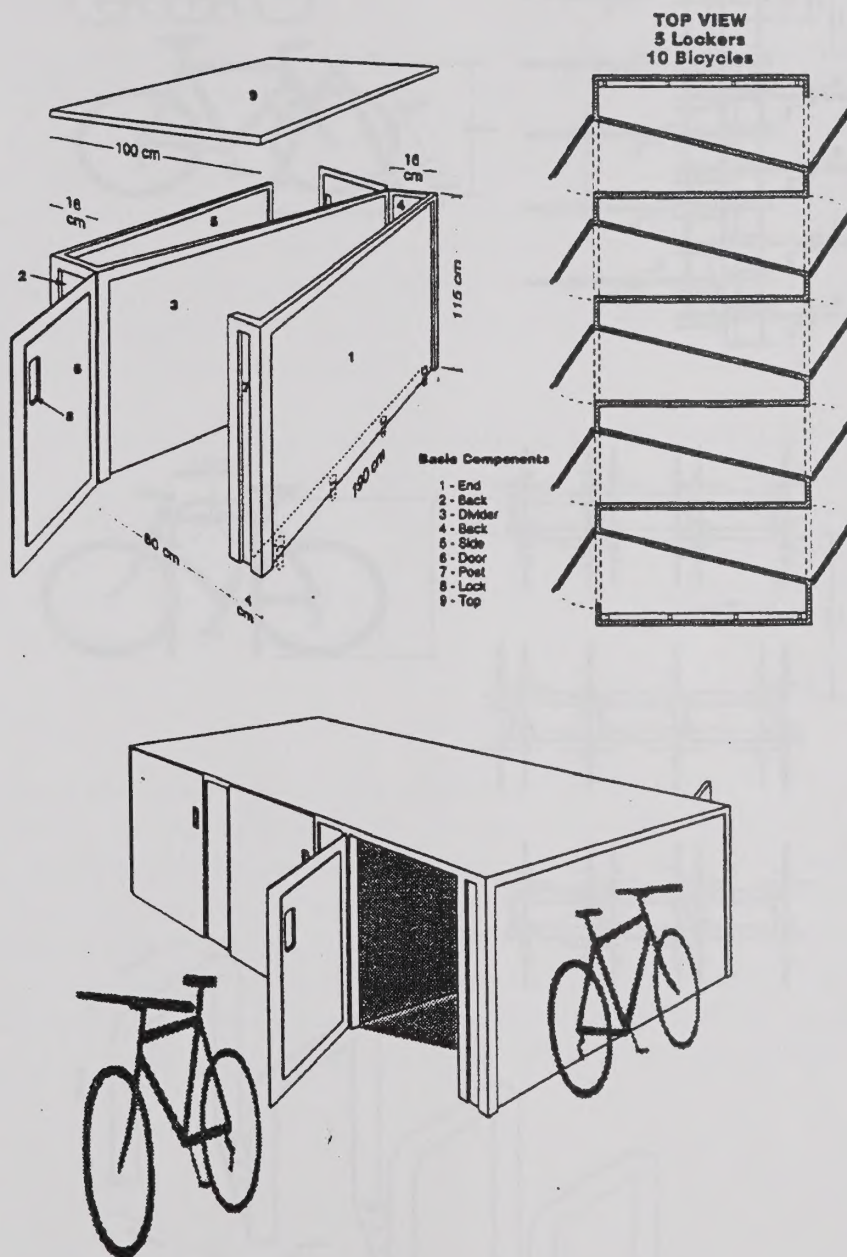


Figure 4: Class I Bike Locker Designs

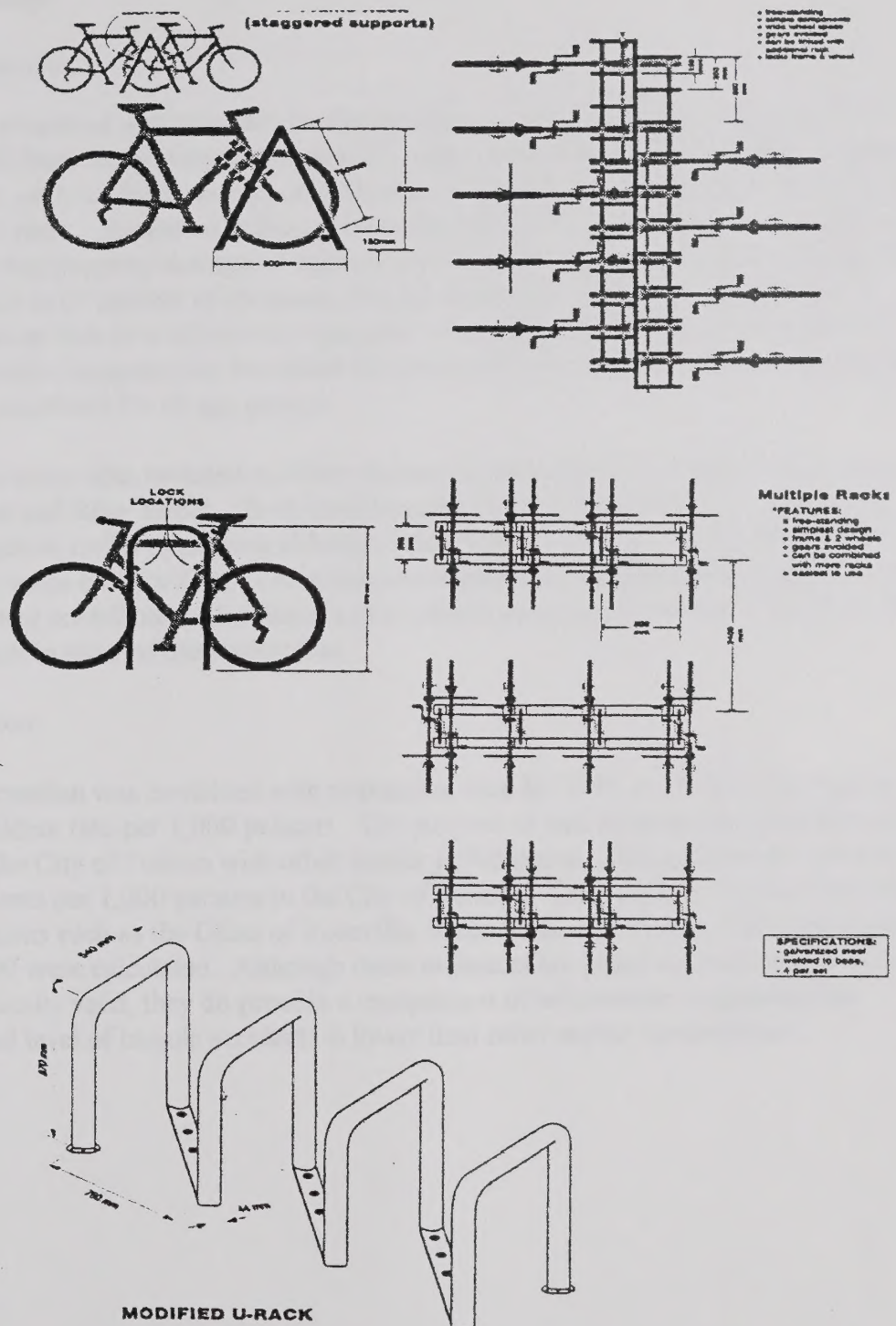


Figure 5: Class II Bike Rack Designs

2.6 Bicycle Safety

2.6.1 Accident Review

The accident data presented was recorded for the past three-and-one-half years (January 1995 through June 1998) from the Statewide Integrated Traffic Records System (SWITRS). Figure 6 shows the location, party at fault, severity, and number of bicycle accidents in the City of Folsom over the past three years. As shown in Figure 6, no fatalities have occurred in the City although 48 accidents involving property damage or injuries were reported. Of the accidents reported, the bicyclist was at fault in 67 percent of the cases. In most cases, the bicyclist was also injured. Typically, bicyclists at fault in accidents are riding the wrong way on-street or making illegal turns. This information suggests that increased education and enforcement could be an important tool in decreasing accidents for all age groups.

The accident data review also revealed accident clusters in the Central Business District, along East Bidwell Street and Riley Street. Both corridors are characterized as having high traffic volumes and congested traffic operations although Riley Street is also an older more narrow roadway with less space for bicyclists. These conditions plus the presence of numerous schools, shops, and parks may contribute to the clusters of accidents along each roadway. However, the bicyclist was at fault in most of these accidents.

2.6.2 Comparisons

The accident information was combined with population data for 1995 to 1998 to estimate an annual bicycle accident rate per 1,000 persons. The purpose of this estimate was to compare the accident rate for the City of Folsom with other similar jurisdictions. This comparison revealed a rate of 0.34 accidents per 1,000 persons in the City of Folsom. This rate is lower than that found in similar jurisdictions such as the Cities of Roseville, Santa Rosa, and Visalia, California where rates closer to 1.00 were calculated. Although these estimates are based on small sample sizes and are not statistically valid, they do provide a comparison of information suggesting that Folsom's reported level of bicycle accidents is lower than other similar communities.

2.7 Existing Bicycle Safety Programs

Safety is a major concern of both existing and potential bicyclists. For those who ride, safety is typically an on-going concern and sometimes a distraction. Potential riders often consider safety one of the most compelling reasons not to ride. These reasons make safety education for both children and adults an important component of this plan.

An evaluation of bicycle education and safety programs currently offered in Folsom was conducted as part of this planning effort. Table 5 on the following page contains a summary of the existing bicycle safety education programs offered in Folsom. This information was evaluated to determine the effectiveness of these existing efforts as a whole, and to make recommendations to improve bicycle safety education for residents and visitors.

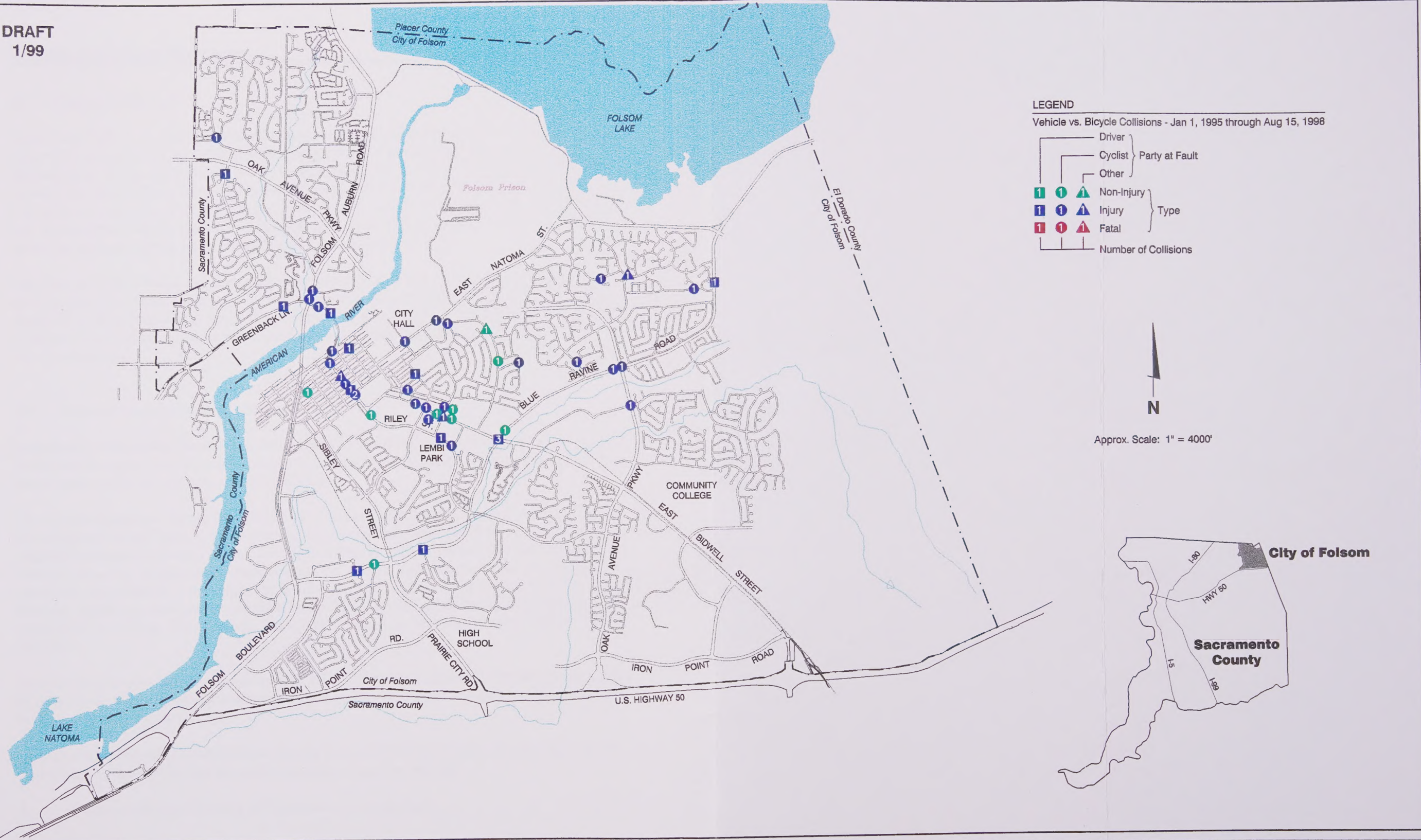
**TABLE 5
BICYCLE EDUCATION PROGRAM SUMMARY**

Agency/Entity	Program	Contact Name and Phone/Fax	Purpose of Program	Program Details
Folsom Parks and Recreation	Bike Maintenance	Jim Konopka (916) 355-7285	Basic bicycle maintenance	Works cooperatively with Bicycles Plus Bike Shop which provides basic bicycle maintenance instruction. Program is geared towards adults but is open to children as well.
City of Folsom Police Department	Bicycle Rodeo	Terry Solgas (916) 355-7231	Bicycle safety	Bicycle education for children. Officers of the Juvenile Department and Bicycle Patrol conduct Bike Rodeos at elementary schools to teach riding safety (i.e. using helmets) as well as proper technique for street riding.
City of Folsom Police Department	Bicycle Patrol	Don Kouplos (916) 355-7231	Bicycle patrol for crime and safety	Four officers patrol Folsom on bikes. Their role is to issue tickets, prevent crime, and enforce bicycle safety rules. These officers participate regularly in Bicycle Rodeos and serve as role models for young bicyclists.
California Highway Patrol	Publications	Mike Berndt (916) 263-3550	Bicycle safety	A coloring book emphasizing safety is distributed to younger children. Additional flyers are provided for older aged children. These materials are usually given out at bicycle rodeos.
Bicycles Plus Bike Shop	Bike repair	(916) 989-9670 Chris Allen	Basic bicycle maintenance	Provides basic bicycle maintenance classes through Folsom Parks and Recreation and privately. Students register for a series of classes once a week. The program is geared towards adults but is open to children. Working on establishing weekly rides. The bike shop has run Bicycle Rodeos and would be open to suggestions for providing future public service.

TABLE 5
BICYCLE EDUCATION PROGRAM SUMMARY

Agency/Entity	Program	Contact Name and Phone/Fax	Purpose of Program	Program Details
Carl H. Sundahl Elementary School	Review of bicycle safety for primary children.	(916) 989-9182 Leslie Faust, Principal	Bicycle Safety	Younger students (grades K-3) must have parents sign a contract to follow bicycle safety rules. Bicycle safety principles are reviewed with both parents and children by school staff, usually the principal.
Carl H. Sundahl Elementary School	Bicycle Rodeo	(916) 989-9182 Leslie Faust, Principal	Bicycle Safety	PTA has sponsored rodeo / bicycle safety day held once a year. Education provided by Teri Solgas of the Folsom Police Department, Juvenile District.
Theodore Judah Elementary School	Bicycle Rodeo	(916) 983-4469 Sharon Heilman	Bicycle Safety	PTA sponsors the Rodeo. Education provided by the Folsom Police Department. Has not been organized for several years, but the principal hopes it will be a yearly event.
Blanch Sprentz Elementary School	Bicycle Rodeo	(916) 985-3626	Bicycle Safety	The school has not run the Rodeo in a few years because of declining bicycle use to and from school. The principal sees no need to re-establish the program. The Rodeo was run by Teri Solgas of the Folsom Police Juvenile District.
Oak Chan Elementary School	Bicycle Rodeo	(916) 983-0190 Lois Beard	Bicycle Safety	PTO organizes and sponsors the Rodeo. Its held once a year. Education provided by the Folsom Police Department, Juvenile District.
Folsom Hills	Bicycle Contracts	(916) 985-0771 Mrs. Walden	Bicycle Safety	Bike contracts are filled out by all student riding to school to ensure that they are wearing a helmet. Parents must sign the contract. First graders are required to ride with a parent. Bike rodeos are held only when the PTA organizes it and hasn't been held in a few years.

Notes: * Natoma Station Elementary School did not respond to the phone survey.



City of Folsom Bikeway Master Plan
BICYCLE ACCIDENT MAP

2.8 Programs Offered

As shown in Table 5, the most comprehensive bicycle safety education programs are provided by the elementary schools in Folsom. Almost all elementary schools provide a Bicycle Rodeo that teaches children how to ride safely on the road. In most cases, the Rodeo is sponsored by the parent teacher's association (PTA) and taught by a staff member of the Juvenile Department of the Folsom Police Department. The programs are open to all children, whether they ride a bicycle to school or not. An additional program is offered by Sundahl and Folsom Hills Elementary Schools to reinforce safety for younger children by involving parents in the education process.

The City of Folsom Parks and Recreation Department also offers a program cooperatively with Bicycles Plus Bike Shop. This program emphasizes the basics of bicycle repair and maintenance. Bicycles Plus Bike Shop also provides this service to the general public. In addition, the California Highway Patrol provides bicycle safety publications to school children as part of Rodeo or other organized events.

2.9 Relevant Legislation and Policies

Aside from the City's own General Plan which identifies specific goals and policies that are relevant to the bicycle master plan, there are several other city, state, regional, and federal requirements for master plans which are primarily related to funding.

The Folsom Bikeways Master Plan should be consistent with the Sacramento Area Council of Governments Regional Bikeway and Pedestrian Study, especially since SACOG is the main funding conduit for bikeway funds into Folsom. The Regional Plan identifies a Primary Bikeway System that includes a number of short-term improvements for Folsom including the Rainbow Bridge, the American River Bikeway Connection, the South Lake Natoma Bike Trail, and the Historic Canal Bikeway. Additional improvements identified by the Regional Plan are the Power Line Bikeway, the Railroad Right-of-Way Corridor, the North-South Bikeway, and the Humbug-Willow Creek Parkway.

Caltrans plays an oversight and review role for TEA-21 funding programs for bicycle projects. All of these bicycle funding programs require approval of a Bicycle Master Plan with specified elements in order to qualify for the program.

On a state level, according to the California Bicycle Transportation Act (1994), all cities and counties should have an adopted bicycle and pedestrian master plan that contains:

- Estimated number of existing and future bicycle commuters
- Land use and population density

- Existing and proposed bikeways
- Existing and proposed bicycle parking facilities
- Existing and proposed multi-modal connections
- Existing and proposed facilities for changing and storing clothes and equipment
- Bicycle safety and education programs
- Citizen and community participation
- Consistency with transportation, air quality, and energy plans
- Project descriptions and priority listings
- Past expenditures and future financial needs

In addition to these required elements, the *Caltrans Highway Design Manual* contains specific design guidelines which must be adhered to in California. 'Chapter 1000: Bikeway Planning and Design' of the Manual sets the basic design parameters of on-street and off-street bicycle facilities, including mandatory design requirements.



Photos Wales Drive (above) and Sibley Street (below) are typical constrained bikeway corridors in Folsom.



3.0 Needs Analysis

A public workshop was held in Folsom on June 24, 1998, with the purpose of identifying bicycling needs. Attendees were asked to comment and show on a large-scale map of the City their current riding habits and their views on bicycling opportunities and constraints in Folsom. Results of the workshop, public surveys, and subsequent correspondence and field review are presented below:

- Key bicycling routes are fragmented.
- High auto speeds are a danger to cyclists.
- Movement along Blue Ravine Rd. including turning and travel through intersections is especially difficult.
- There is a high incidence of debris on road shoulders and in bike lanes.
- Traffic signals either are not equipped to detect bicycles, and/or green light lengths do not allow safe travel through intersections.
- The Rainbow Bridge is a challenge for cyclists; it creates a significant gap between the eastern and western portions of Folsom.
- The Humbug-Willow Creek Trail is a missing link in route connectivity.
- Cyclists would like to regain access to the Folsom Lake Dam.
- Cyclists and recreationalists would like a comprehensive map detailing facilities available for use.
- Cyclists would like to see trails around Lake Natoma connected.
- Conditions on East Bidwell Street are tough to negotiate. The East Bidwell/Scott Road/Old Placerville intersection is especially challenging to cyclists.
- There is a lack of adequate short or long term secure bicycle parking.

A survey of bicycle use was also conducted with the following results:

Bicycle Survey Results

1. Bicycle ownership:	0 bicycles	0%		
	1	17%		
	2	52%		
	3+	30%		
2. Type of Bicycle:	BMX/Mtn.Bike	32%		
	Road	56%		
	Cruiser	4%		
	Recumbent	8%		
3. Bicycling levels:	1x or more per day	16%		
	1-6x/week	42%		
	1-3x per month	32%		
	Very rarely	5%		
	Never	5%		
4. Trip purpose:	Recreation	54%		
	Shopping	8%		
	Work	38%		
	*School	0%		
5. Reason why you don't ride or ride more often:				
	Safety	26%		
	Distance/time	4%		
	Lack of bike parking	13%		
	Weather/darkness	16%		
	Need access to car	16%		
	Lack of places to ride	25%		
6. Top constraints:				
	Lack of maintenance	17%	Conditions on E. Bidwell	3%
	Noncontiguous routes	13%	Folsom Boulevard	1%
	Blue Ravine Rd. corridor	15%	Finish Humbug-Willow Creek	1%
	Safety/Excessive auto speeds	15%	Multi-modal connections	1%
	Signal Detectors	11%	Bikes in Historic District	1%
	American River Crossing	11%	Lack of bike parking	1%
	Lack of education/incentives	9%	Lack of places to ride	1%
	Improve trail access/egress	7%	Natoma St.	1%
	Access to Folsom Dam	3%		

* We did not receive any surveys from school aged children (ages 7-12). This explains why school trip purpose came in at zero. Future surveys will be distributed to all the schools.

These results plus many individual comments represent a summary and sample of opportunities and constraints in Folsom, and will be used to help create a bikeways system and program.

3.1 Commuter and Recreational Needs

Key general observations about bicycling needs in Folsom include:

- **Bicyclists are typically separated between experienced and casual riders.** The U.S. Department of Transportation identifies thresholds of traffic volumes, speeds, and curb lanes where less experienced bicyclists begin to feel uncomfortable. For example, on an arterial with traffic moving between 30 and 40 miles per hour, less experienced bicyclists require bike lanes while more experienced bicyclists require a 14 or 15 foot wide curb lane.
- **Casual riders include those who feel less comfortable negotiating traffic.** Casual riders such as children and the elderly may have difficulty gauging traffic, responding to changing conditions, or moving rapidly enough to clear intersections. Other bicyclists, experienced or not, may be willing to sacrifice time by avoiding heavily traveled arterials and using quieter side streets. In some cases, casual riders may perceive side streets (or sidewalks) as being safer alternatives than major through routes, when in fact they may be less safe. Other common attributes of the casual bicyclist include shorter trip distances than the experienced rider and unfamiliarity with many of the rules of the road.

The casual bicyclist will benefit from route markers, bike lanes, wider curb lanes, and educational programs. Casual bicyclists may also benefit from marked routes which lead to parks, museums, historic districts, and other visitor destinations.

- **Experienced bicyclists include those who prefer the most direct, through route between origin and destination, and a preference for riding within or near the travel lanes.** Experienced bicyclists negotiate streets in much the same manner as motor vehicles, merging across traffic to make left turns, and avoiding bike lanes and shoulders that contain gravel and glass. The experienced bicyclist will benefit from wider curb lanes and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes which lead back to the point of origin.
- **Bicycles themselves range in cost from about \$350 to over \$2,000 for adult models.** The most popular bicycle type today is the hybrid mountain bike or BMX. These relatively light weight bicycles feature wider knobby tires that can handle both on-road and off-road conditions, from 10 to 27 gears, and up-right handlebars. Advanced versions have features such as front and rear shocks to help steady the rider on rough

terrain. The 10-speeds of years past has evolved into a sophisticated ultra-light 'road bicycle' that is used primarily by the serious long distance adult bicyclists. These expensive machines feature very narrow tires that are more susceptible to flats and blow-outs from debris on the roadway.

- **Who rides bicycles?** While the majority of Americans (and Folsom residents) own bicycles, most of these people are recreational riders who ride relatively infrequently. School children between the ages of about 7 and 12 make up a large percentage of the bicycle riders today, often riding to school, parks, or other local destinations on a daily basis weather permitting. The serious adult road bicyclist who may compete in races, 'centuries' (100 mile tours) and/or ride for exercise make up a small but important segment of bikeway users, along with serious off-road mountain bicyclists who enjoy riding on trails and dirt roads. The single biggest adult group of bicyclists in Folsom is the intermittent recreational rider who generally prefers to ride on pathways or quiet side streets.

Recreational Needs

The needs of recreational bicyclists must be understood prior to developing a system or set of improvements. While it is not possible to serve every neighborhood and every need, a good plan will integrate recreational needs to the extent possible. The following points summarize recreational needs:

Recreational bicycling typically falls in to one of three categories: (1) exercise, (2) non-work destination such as a park or shopping, or (3) touring.

- Recreational users range from adults to children to senior citizens. Each group has their own abilities, interests, and needs.
- Directness of route is typically less important than routes with less traffic conflicts, visual interest, shade, protection from wind, moderate gradients, or other features.
- People exercising or touring often (though not always) prefer a loop route rather than having to back-track.

Commuter Needs

Commuter bicyclists range from employees who ride occasionally to work to a child who rides to school. Millions of dollars have been spent attempting to increase the number of people who ride to work or school, with moderate success. Bicyclists require shorter commutes, which runs

counter to our land use and transportation policies which encourage people to live further and further from where they work. Access to transit helps extend the commute range of cyclists, but transit systems also face an increasingly dispersed live-work pattern which is difficult to serve. Despite these facts, Folsom has a great potential to increase the number of people who ride to work or school because of (a) the small size of the city, (b) several large employers within or near the City, (c) a favorable topography and climate, and (d) a high percentage of work trips that are less than 15 minutes.

Key commuter needs are summarized below.

Commuter walking or bicycling typically fall in to one of two categories: (1) adult employees, and (2) younger students.

- Commuter trips range from several blocks to one or more miles.
- Commuters typically seek the most direct and fastest route available, with regular adult commuters often preferring to ride on arterials rather than side streets.
- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to safely store bicycles, to shower, and lockers for storage are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (rain), riding in darkness, personal safety and security.
- Rather than be directed to side streets, most commuting cyclists would prefer to be given bike lanes or wider curb lanes on direct routes.
- Unprotected intersections in general are the primary concerns of all bicycle commuters.
- Many younger students use sidewalks for riding to schools or parks, which is acceptable in areas where pedestrian volumes are low and driveway visibility is high. Where on-street parking and/or landscaping obscures visibility, sidewalk riders may be exposed to a higher incidence of accidents. Older students who consistently ride at speeds over 10 mph should be directed to riding on-street wherever possible.
- Students riding the wrong-way on-street are common and account for many recorded accidents, pointing to the need for education and enforcement.

3.2 Needs Analysis

The purpose of reviewing the needs of recreational and commuter bicyclists is twofold: (a) it is instrumental when planning a system which must serve both user groups and (b) it is useful when attempting to quantify future usage and benefits to justify expenditures of resources. According to a May 1991 Lou Harris Poll, it was reported that *"...nearly 3 million adults--about one in 60--already commute by bike. This number could rise to 35 million if more bicycle friendly transportation systems existed."* In short, there is a large reservoir of potential bicyclists in Folsom who don't ride (or ride more often) simply because they do not feel comfortable using the existing street system and/or don't have appropriate bicycle facilities at their destination.

A common term used in analyzing the demand or need for bicycle or pedestrian facilities is 'mode split.' Mode split refers to the choice of transportation a person selects to move from home to work to shopping to other destinations. One major objective of any bicycle improvement is to increase the 'split' or percentage of people who choose to ride rather than drive or be driven. Every saved vehicle trip or vehicle mile represents quantifiable reductions in air pollution. A summary of a needs analysis is presented below.

Traffic and Air Quality Benefits

A key goal of the Bicycle Master Plan is to maximize the number of bicycle commuters in order to help achieve large transportation goals such as minimizing traffic congestion and air pollution. In order to set the framework for these benefits, national statistics and policies are used as a basis for determining the benefits to Folsom.

- Currently, nearly 3 million adults (about 1 in 60) commute by bicycle. This number could rise to 35 million if adequate facilities were provided (according to a 1991 Lou Harris Poll).
- The latent 'need' for bicycle and pedestrian facilities--versus actual bicyclists and pedestrians--is difficult to quantify; we must rely on evaluation of comparable communities to determine potential usage.
- Mode split refers to the choice of transportation people make whether for work or non-work trips. Currently, the average household in the U.S. generates about 10 vehicle trips per day. Work trips account for less than 30% of these trips on average.
- According to the 1990 U.S. census, less than .3 % of all employed Folsom residents commute primarily by bicycle. This does not include those who ride less than 50% of the time. Thus, the bicycle commute rate in Folsom is considerably lower than the rate of

California and the United States as a whole. This figure is somewhat deceiving because it does not include students in Folsom, nor does it account for the rapid growth experienced since 1990.

The bicycle/walk commute mode share for Sacramento County employees as a whole is 3.7% (source: SACOG, 1997). The distances between residences and workplaces combined with the types of employment, climate, and available bicycle facilities all influence these commute shares. As Folsom grows and additional local employment opportunities become available and better bicycle connections to Sacramento are provided, bicycle mode share in Folsom can be expected to increase to the state and national average.

The U.S. Department of Transportation, in their publication entitled "National Walking and Bicycling Study" (1995), sets as a national goal the doubling of current bicycling mode shares by the year 2010, assuming that a comprehensive bikeways system is in place. Since the national bicycle mode share is about 1%, this will translate into a bicycle commute mode share of 2% in Folsom or about 230 commuters. Add to this number commuters who bicycle occasionally and students at local schools, and the average number of daily bicyclists in Folsom increases to an estimated 850 bicycle commuters by 2010. These bicyclists will be saving an estimated 400 vehicle trips per day, 212,000 trips per year, and 318,000 vehicle miles per year. The combined benefit of these future bicycle commuters over the next 20 years is a reduction of about 7,632 lbs. of PM₁₀, 20,670 lbs. of No_x, and 29,892 lbs. of ROG.

Table 6 Demographics and Transportation & Air Quality Benefits	
Population (1997)	35,250
Land Area (estimated)	12,902 acres
Estimated Folsom Residents who Bicycle for Pleasure	16,215
Current Bicycle Commute Mode Share (1997)	34
Projected Bicycle Commute Mode Share	230
School-related bicycle commuters	619
Total projected bicycle commuters	849
Reduced Vehicle Trips/Year	212,000
Reduced Vehicle Miles/Year	318,000
Reduced PM ₁₀ /lbs./Year	7,632
Reduced No _x /lbs./Year	20,670
Reduced ROG/lbs./Year	29,892

Bicycling is one of the most popular forms of recreational activity in the United States, with 46% of Americans bicycling for pleasure. These figures indicate that about 16,215 residents over the age of 10 in Folsom do or would like to bicycle for pleasure. If nothing else, this indicates a latent demand for facilities and a potent constituency to push for better facilities.

4.0 Safety, Education, Outreach, and Security

4.1 Bicycle and Pedestrian Safety Education Programs

The Folsom Bikeways Master Plan provides both physical recommendations (such as bike lanes) and program recommendations. Some of the program recommendations, such as changes in zoning requirements for bicycle parking, have already been covered. This section covers future efforts to educate bicyclists and motorists, and efforts to increase the use of bicycles as a transportation alternative.

4.2 Education

The Folsom Unified School District, Police Department, and the Department of Public Works have a long history of trying to improve safety conditions for bicyclists and pedestrians. Despite these efforts, the lack of education for bicyclists, especially younger students, is a leading cause of accidents. For example, the most common type of reported bicycle accident in California involves a younger person (between 8 and 16 years of age) riding on the wrong side of the road in the evening hours. Studies of accident locations around California consistently show the greatest concentration of accidents is directly adjacent to elementary, middle, and high schools. Many less-experienced adult bicyclists are unsure how to negotiate intersections and make turns on city streets.

Motorist education on the rights of bicyclists and pedestrians is virtually non-existent. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride in travel lanes and that they should be riding on sidewalks. Many motorists do not understand the concept of 'sharing the road' with bicyclists, or why a bicyclist may need to ride in a travel lane if there is no shoulder or it is full of gravel or potholes.

Existing education programs in schools are generally taught once a year to 3rd, 4th, and 5th graders. Curriculum is generally derived from established programs developed by groups such as the California State Automobile Association, and taught by members of the Folsom Police Department. Budget cuts, demands on students' time, and liability concerns limit the extent of bicycle education to school children. Formal adult bicycle education is non-existent.

Recommended Program: Expand Current Education Programs

Existing educational programs in Folsom schools should be expanded and supported by a secure, regular funding source. Efforts of the City's Traffic Safety Committee to coordinate needs of school commuters should be continued.

Recommended Program: Develop New Educational Program Materials and Curriculum.

Education materials should be expanded to promote the benefits of bicycling, the need for education and safety improvements, the most recent educational tools available in the country (including the use of low-cost safety videos), and directives to parents on the proper school drop-off procedure for their children. Educational pamphlets for children should be made more readable. Incentive programs to reward good behavior should be developed. Educational programs, and especially on-bike training, should be expanded to more grades and for more hours per year. Education curriculum should, at a minimum, cover the following lessons:

- on-bike training or bicycle ‘rodeos’
- how to adjust and maintain a bicycle
- night riding (clothes, lights)
- rules of the road
- riding on sidewalks
- how to negotiate intersections
- riding defensively
- use of hand signals

A standard safety handbook format should be developed incorporating the best elements of those currently in use, and made available to each school on disk so they may be customized as needed. Each school should develop a circulation map of the campus and immediate environments to include in the handbooks, clearly showing the preferred circulation and parking patterns and explaining in text the reason behind the recommendations. This circulation map should also be a permanent feature in all school newsletters. Bicycle helmet subsidy-programs are available in California, and should be used to provide safety approved low-cost helmets for all school children who ride bicycles.

Recommended Program: Produce a Bicycle Commuter Handbook.

Develop a bicycle commuter handbook through the Parks and Recreation Department, or other City departments that identifies the local system and commute routes available to bicycle commuters. This may include maps, commuter education programs, motorist education programs, and employer incentives. Work with local employers to distribute the handbooks and safety literature.

Recommended Program: Develop an Adult Education Program.

Establish an adult bicycle education program through the Parks and Recreation Department, or other City departments that (a) teaches adults how to ride defensively, (b) how to ride on a variety of city streets, and (c) encourages adults to feel more confident to ride to work or for recreation. Work with local bicycling groups who could provide the training expertise, and possibly lead organized bicycle training sessions, tours and rides.

Recommended Program: Educate Motorists

Educate motorists about the rights and characteristics of bicyclists through a variety of means including: (a) making bicycle safety a part of traffic school curriculum in Folsom, (b) producing a brochure on bicycle safety and laws for public distribution, (c) enforcing existing traffic laws for both motorists and bicycles, (d) sending an official letter to the Department of Motor Vehicles recommending the inclusion of bicycle laws in the drivers license exam, and (e) install signs that read 'Share the Road' with a bicycle symbol at least every 1,000 feet along all routes of the proposed primary system where bike lanes are not feasible, travel lanes are under 14 feet wide, and ADTs exceed 20,000.

Recommended Program: Identify School Commute Routes

This plan has identified many routes which will benefit school children who choose to walk or bicycle to school. However, each school needs to conduct its own evaluation of school commute patterns and work with the City in identifying crossing and corridor improvements. Identifying and improving routes for children to walk or bicycle to school is one of the most cost effective means of reducing AM traffic congestion and addressing existing safety problems. Most effective school commute programs are joint efforts of the school district and city, with parent organizations adding an important element.

Recommended Program: Develop School Commute Route Improvement Plan

Develop a tool that can be used to evaluate safety conditions on school commute corridors to determine if conditions are within acceptable bounds. This can be done using state or City accident data, surveys of parents on their school commute habits, surveys of students who walk or ride to school, and other sources. Develop specific thresholds by which meaningful comparisons can be made.

Develop a toolbox of measures that can be implemented by the school district and City to address safety problems. This may include maps of preferred school commute routes, warning signs, enhanced education, additional crossing guards, signal treatments (longer cycles, ped activated buttons, etc.), enhanced visibility at key locations (lighting, landscaping abatement), crosswalks, bike lanes, and other measures.

4.3 Community and Employer Outreach

Without community support, a bicycle and pedestrian plan lacks the key resources that are needed to ensure implementation over time. While the City Public Works Department may be responsible for designing and constructing physical improvements, strategies for community involvement will be important to ensure broad-based support--which translates into political support--which can

help secure financial resources. Involvement by the private sector in raising awareness of the benefits of bicycling and walking range from small incremental activities by non-profit groups, to efforts by the largest employers in the City. Specific programs are described below.

4.3.1 Bicycle Donation Program

A fleet of lender bicycles available to employees to use as a commute alternative has proved successful in Portland and other U.S. cities. The bicycle may be purchased new or obtained from police auctions, repaired, painted and engraved with ID numbers, and made available free of charge to employees. Depending on demand, bicycles may be made available through reservations or on a rotating basis. The bicycles themselves should be lower-end heavy-duty bicycles that have minimal re-sale value. Employer's responsibilities would be limited to an annual maintenance inspection and repairs as necessary. The objective of the program is to encourage employees to try bicycling to work as an alternative, without making a major investment. Employers may wish to allow bicycle commuters to leave 15 minutes early from work, or some other type of incentive to encourage use of the bicycles. It is recommended that the City of Folsom (all Departments) be the first to try this program, and to encourage private employers to follow suit by offering TDM credits or subsidized purchases of bicycles.

4.3.2 Bicycle Clunker and Parts Program, Bicycle Repair Program

This program ties directly into the previous program by obtaining broken, stolen, or other bicycles and restoring them to working condition. The program's dual mission is also to train young people (ages 12-18) how to repair bicycles as part of a summer jobs training effort. Bicycles are an excellent medium to teach young people the fundamentals of mechanics, safety, and operation. Young people can use these skills to maintain their own bicycles, or to build on related interests. The program is often staffed by volunteers from local cycling organizations and bicycle shops, who can help build an interest in bicycling as an alternative to driving. The seed money to begin this program often comes from a local private funding source. The proposal submitted to this source should clearly outline the project objectives, operating details, costs, effectiveness evaluation, and other details. The bicycles themselves could be derived from unclaimed stolen bicycles from the police department, or from donated bicycles. The program will need to qualify as a Section 501C(3) non-profit organization to offer tax deductions.

4.3.3 Bicycle Facilities Map

Work with the Parks & Recreation Departments, the School District, Chamber of Commerce, Sacramento Area Council of Governments (SACOG), and local businesses to produce a local bicycle/walking map that shows existing and recommended touring and commuting bicycle routes, access to regional mountain bike trails, historic walking tours, and school commute routes.

4.3.4 Community Adoption

Programs to have local businesses and organizations 'adopt' a pathway such as the Humbug/Willow Creek System have proven effective around the country, similar to the adoption of segments of the Interstate Highway system. Supporters would be identified by small signs located along the pathway, acknowledging their contribution. Support would be in the form of an annual commitment to pay for the routine maintenance of the pathway (cleaning, repairs, landscape maintenance, etc.), which in general costs about \$8,500 per mile. This program may be administered by Parks & Recreation or other groups.

4.3.5 Bike Fairs and Races

The City is well positioned to capitalize on the growing interest in on-road and off-road bicycle races and criteriums. Events would need to be sponsored by local businesses, and involve some promotion, insurance, and development of adequate circuits for all levels of riders. It is not unusual for these events to draw up to 1,000 riders, which could bring some additional expenditures into the town.

The City can assist in developing these events by acting as a co-sponsor, and expediting and possibly underwriting some of the expense of--for example--police time. The City should also encourage these events to have races and tours that appeal to the less experienced cyclist. For example, in exchange for underwriting part of the costs of a race the City could require the event promoters to hold a bicycle repair and maintenance workshop for kids, short fun races for kids, and/or a tour of the route lead by experienced cyclists who could show less experienced riders how to safely negotiate city streets.

4.3.6 Employer Incentives

Beyond programs described earlier such as the Bicycle Donation Program, employer incentives to encourage employees to try bicycling or walking to work include sponsoring bike fairs and races, providing bicycle lockers and shower facilities, and offering incentives to employees who commute by bicycle or walk by allowing for more flexible arrival and departure times, and possibly paying for transit or taxis during inclement weather. The City may offer incentives to employers to institute these improvements through air quality credits, lowered parking requirements, reduced traffic mitigation fees, or other means.

4.4 Other Safety Improvements

In addition to the education actions listed above and the proposed bikeways system improvements, the following miscellaneous actions address a variety of needs and deficiencies.

Sidewalks and Street Crossings

Street crossings are generally provided with crosswalks, warning signs, lighting, signals, and/or pavement treatments. Standards for the design, operation, and installation of pedestrian crossings have been developed by a variety of organizations such as Caltrans and AASHTO. The type and location of crossing improvements is often based on an evaluation of pedestrian and bicycle volumes, spacing between crossings, traffic volumes, accident patterns, and other information. There has been a recent trend nationwide of removing unprotected mid-block crossings based on the perception that it gives pedestrians a false sense of security and leads to a higher accident rate.

The City should adopt minimum thresholds for crossing facilities that are applied city-wide. This includes minimum green time at signalized intersections based on street width, minimum distances between crosswalks on collectors and arterials, minimum sight clearance (including on-street parking restrictions), and minimum lighting standards.

Recommended Program: Sidewalk Management Plan

The City should examine its current ordinance regulating bicycle use of sidewalks, and adopt a new ordinance clearly defining if and under what circumstances bicycle riding on sidewalks is acceptable. Many cities develop ordinances which allow bicycle use on sidewalks with some limitations such as maximum speeds in busy commercial areas.

5.0 Multi-Modal Connections

An integral part of every bikeways system is the support facilities that aid cyclists at multi-modal connections. These facilities include bike racks on busses, bike storage on light rail cars and other transit, and bike parking at transit stations and stops.

5.1 Existing Connections

5.1.1 *The Folsom Stage Line*

Folsom's bus service, the Folsom Stage Line, offers bike racks on all of their busses, and bikes are allowed on-board their fleet of vans. The Stage Line provides connections to Sacramento Regional Transit's closest services located in Rancho Cordova. Stage Line Busses connect to the Mather Field Light Rail Station and the #24 Bus Line daily, during the morning and evening commute.

5.1.2 *Sacramento Regional Transit Bus Service*

Sacramento Regional Transit offers connections to Sacramento from the Folsom Stage Line via an express bus and the #24 line, which stop at Madison Avenue and Main Avenue during the morning and evening commutes.

5.1.3 *Sacramento Regional Transit Light Rail Service*

Currently, there are no Regional Transit Light Rail stations in Folsom. The closest light rail station is the Mather Field Station located at Mather Road and Folsom Blvd., in Rancho Cordova. Sacramento Regional Transit has plans for a light rail extension to Folsom. A joint EIS/EIR is being performed, and presently three stations are planned. The Iron Point Station, to be located at Iron Point Drive and Folsom Boulevard, is scheduled to be completed summer 1999. The Historic Folsom Station, located at Leidesdorff Street and Folsom Boulevard, is scheduled to be completed in the summer 2000. The Silverbrook Station is the final station planned for Folsom, its proposed location is Glenn Drive at Folsom Boulevard.

Sacramento Regional Transit currently provides a minimum of ten lockers and ten rack spaces at new light rail stations. These facilities are immediately used to capacity. However, they have no definitive standards for development of bicycle parking facilities in relationship to train ridership. The development of parking facilities is directly related to available space.

Recommended Program:

Bike racks and lockers should be provided at all of the proposed light rail stations. Each station should provide a minimum of twenty locker spaces (utilizing 2-1 locker technology), and twenty rack style bike parking spaces. All bicycle parking should be in a safe, secure, covered area (if possible).

Recommended Program:

The City should consider establishing a bike station at one of the three proposed Light Rail Stations. Bike Stations enhance multi-modal connections. Stations are typically leased by a private vendor and provide bicycle parking, showers, restrooms, and bicycle services such as sales, maintenance, rentals, and concessions.

6.0 Recommended System & Improvements

The recommended system and improvements consists of two distinct components:

- Bicycle Facilities
- Bicycle Programs

6.1 Bikeways System

The recommended bicycle circulation strategy consists of a system of routes, lanes, and paths connecting residential neighborhoods in Folsom with the schools, parks, library, downtown, and other destinations. When completed, the Folsom bikeways system will be one of the most comprehensive networks for a mid-sized city in the United States. The proposed bikeways system is shown in Figure 7.

The proposed Folsom Bikeways System is characterized by a network of major off-street Class I pathway corridors including (1) the Humbug-Willow Creek Trail Corridor, (2) the East Lake Natoma Trail connecting to the Historic Truss Bridge over the American River, (3) the American River Bikeway, (4) the Folsom Boulevard Rail Trail, and (5) several other pathway segments using roadway or utility corridors. Major Class II bike lane facilities include (1) Folsom Boulevard, (2) Iron Point Road, (3) Blue Ravine Road, (4) Natoma and East Natoma Street, (5) Oak Avenue Parkway, and (6) many other streets throughout the City. Class III bike routes are recommended only where bike lanes cannot be implemented in Folsom, with the only major segment consisting of the Wales-School Corridor through the heart of the City.

At a minimum, all bicycle corridors identified on the Plan should include intersection protection (including signal detectors) where needed, wider curb lanes where possible, traffic calming where needed to slow traffic, shoulder striping where feasible, and signing. Finally, new bicycle support facilities (such as racks and lockers) and programs are proposed for the City which are detailed later in this report.

The top short term bikeway projects were selected by staff, the public, and bikeway specialists based on their local knowledge and cycling experience, the orientation of funding programs, and the planning criteria outlined in the Master Plan (coverage, connectivity, user groups, implementation, local input, funding sources). The scoring mechanism for selecting the top priority corridors is shown below.

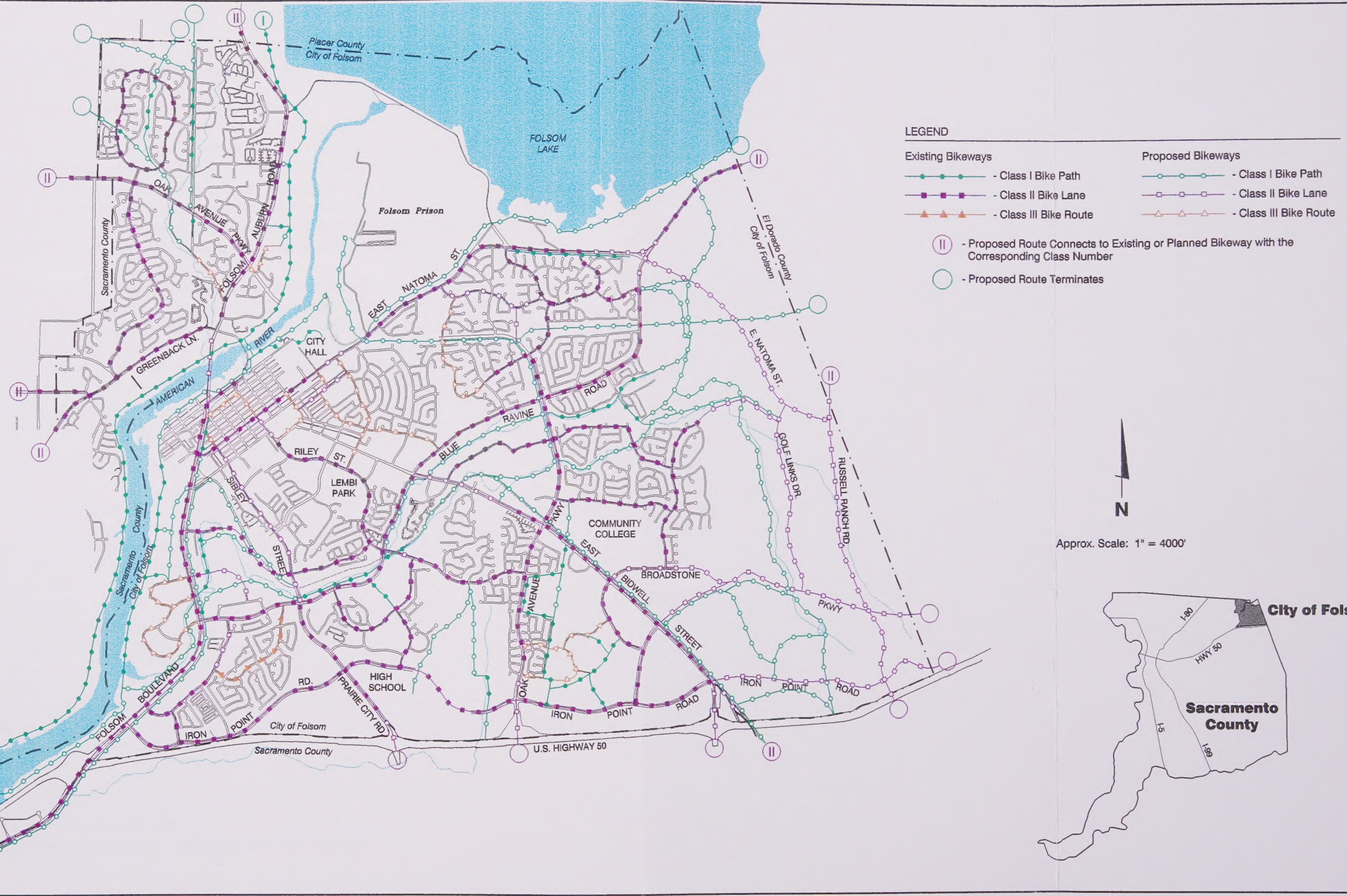


FIGURE 7

City of Folsom Bikeway Master Plan
PROPOSED BIKEWAY SYSTEM

6.2 Creating a Bikeways System

A bikeways 'system' is a network of bicycle routes that, for a variety of reasons including safety and convenience, provide a superior level of service for bicyclists and/or are targeted for improvements by the City due to existing deficiencies. It is important to recognize that, by law, bicyclists are allowed on all streets and roads regardless of whether they are a part of the bikeways system. **The bikeways system is a tool that allows the City to focus and prioritize implementation efforts where they will provide the greatest community benefit.**

There is an established methodology for selecting a bikeways system for any community. The primary method is to receive input from the local bicycling community and local staff familiar with the best routes and existing constraints and opportunities. Input can be received through a variety of means, but typically is through the public workshop format. Two public workshops were held in Folsom on June 24 and November 17, 1998, where citizens were asked to identify the routes they regularly ride plus corridors they saw as either opportunities or constraints. In addition, an extensive survey was conducted and over 100 responses collected that helped identify the types and locations of improvements designed to meet citizen's needs.

The following criteria are typically used to develop a bikeways system:

1. Existing Bicycling Patterns
 1. Connectivity
2. Traffic volumes and travel speeds
3. Amount of side friction (driveways, side streets)
4. Curb-to-curb width
5. Pavement condition
6. Access from residential areas
7. Number of destinations served
 1. Schools
 2. Parks
 3. Employment Centers
8. Topography
9. Integration into the regional system
10. Adjacent land use
11. On-street parking
12. Accident data and safety concerns
13. Existing bottlenecks or constraints
14. Existing opportunities such as planned roadway improvements

The Folsom Bikeways System was developed focusing on connecting existing segments of bike lane, addressing routes used by bicyclists, and focusing on specific opportunities and constraints. The street grid pattern offered several distinct through corridors, which connected residential areas with activity centers such as downtown, schools, and parks.

Once a bikeway system has been identified, the greatest challenge is to identify the top segments that will offer the greatest benefit to bicyclists in the next five years. Table 7 provides a summary of the top five (5) segments identified in surveys distributed to the public and staff.

Table 7
Bicycle Improvements, By Priority

Top Five Segments:

1. **Enhancements to Existing Bicycle Facilities (maintenance, consistency, gap closures, signal detectors, intersection and interchange treatments)**
2. **Blue Ravine-Humbug/Willow Creek Corridor**
3. **Connections to the new Historic Truss Bicycle Bridge and American River Bridge**
4. **East-West (PG&E) Trail**
5. **East Lake Natoma Trail/American River Bikeway Access**

Other high priority segments are:

6. Folsom Boulevard Rail Trail
7. Riley Bike Lanes/Path
8. Foothill (El Dorado County) Rail Trail
9. Natoma-East Natoma Bike Lanes
10. School-Dean-Colma-Stafford-Wales- Bike Route
11. Bicycle Boulevards

Note that some of the top ranked projects (such as Iron Point Road) are already planned to have bike lanes and/or pathways. Finally, it is important to remember that the bikeways system and the top projects are flexible concepts that serve as guidelines to those responsible for implementation. The system and segments themselves will change over time as a result of changing bicycling patterns and implementation constraints and opportunities.

6.3 Description of Proposed Bikeway Improvements

The top five projects meet immediate needs in Folsom, help overcome existing barriers, serve virtually all of the City's activity centers, and link all four quadrants of the community. Each project is presented on its own Project Sheet, which provides key information on the proposal including cost, location, and sample cross sections.

A short description of each project is presented below. A detailed description of how bike lane or route treatments were selected is presented in the Implementation chapter.

Introduction

Maintenance of bike routes, lanes, and trails is an ongoing concern of Folsom. Current conditions include debris, potholes, and broken glass that is "swept" by the normal action of motor vehicles onto shoulders and bike lanes when bicycles pass by. The implementation chapter of this report provides need for standards and recommendations on addressing this issue.

Signed Channels

Signed structures are installed with bikeway mileposts, lane use, and other project-related and citywide or regional, and because they are often installed as part of roadway overall maintenance projects. The symbols of signed channels shall be constructed in areas that currently and are expected to have high bicycle usage. A detailed description of the preferred type, design, and location for signed structures is included in the Implementation chapter of this report.

Intersections and Interchange Treatments

Bicycle treatments at signalized intersections on the existing and proposed bikeway network should be consistent according to the criteria identified in the Design and Implementation Standards chapter, which includes the lane position, location, and mounting position. Interchange treatments include reviewing existing interchanges to make them more bicycle-friendly, and proposed designs which will be presented by the City to Caltrans in the preliminary design process for new or expanded interchanges. Specifically, the incorporation of safe bicycle access through freeway interchanges is considered a high priority.

State Route Corridor

This effort focuses on ensuring that the existing network of state routes corridor and county routes in California standards in terms of design. Many of the existing Class II bikeways are designated. The remaining gaps in the network are a result of historic and recent policy. Filling the

PROJECT #1: ENHANCEMENTS TO EXISTING BICYCLE FACILITIES

Primary Responsibility: Public Works

Right-of-Way Control: City

Required Studies/Actions: Intersection and interchange design, possibly traffic studies

Maintenance

Maintenance of bike routes, lanes, and pathways was the top concern of bicyclists surveyed in Folsom. Current conditions include debris, gravel, and broken glass that is 'swept' by the normal action of motor vehicles onto shoulders and bike lanes where bicyclists must ride. The Implementation chapter of this report provides specific standards and recommendations on addressing this issue.

Signal Detectors

Signal detectors are included with bikeway maintenance because they are more programmatic and citywide in nature, and because they are often installed as part of roadway overlay maintenance projects. The location of signal detectors shall be concentrated in areas that currently and are expected to have high bicycle traffic. A detailed description of the preferred type, design, and locations for signal detectors is included in the Implementation chapter of this report.

Intersection and Interchange Treatments

Bicycle treatments at signalized intersections on the existing and proposed bikeway network should be reviewed according to the criteria identified in the Design and Maintenance Standards chapter, which includes bike lane pocket locations and minimum green time. Interchange treatments include retrofitting existing interchanges to make them more bicycle-friendly, and preferred designs which might be promoted by the City to Caltrans in the preliminary design process for new or upgraded interchanges. Specifically, the accommodation of safe bicycle access through freeway interchanges is considered a high priority.

Bike Lane Consistency

This effort focuses on ensuring that the existing network of bike lanes is consistent and meets minimum Caltrans standards in terms of design. Many of the existing Class II bikeways are fragmented. The resulting gaps in the system are a significant barrier to most riders. Filling the

gaps will go a long way in providing a consistent on-street network. Furthermore, a significant portion of existing striped lanes in Folsom have sub-standard widths which must either be re-classified as Class III bike routes or be widened to meet the minimum design standards.

TRAILS

Extensive Regional Trails:	Farlow & McDevitts (trail)
	Public Works (bike lanes)
Highway Strip Trailways:	City, some private property will require easements or negotiations
Regulated Access Trails:	CTQA clearways, trail and crossing design, new easements

Trail systems, which consist of several distinct and generally parallel bike lanes and routes, have evolved as the second most important highway improvement in Folsom. This category serves more functions than any other mode provided in the City. Three Bypass Road and the Harding-Wilson Creek. Trails are considered important for the specific reason that some bicyclists prefer to use a trail rather than ride on the side of a road. In general, bicyclists who ride with the flow of traffic (like those who ride on the side of a road) will use the Harding-Wilson Creek as a route.

Three Bypass Road

This major arterial already provides bike lanes for virtually its entire length. There is a short gap in the existing bike lanes between Madison Drive and East Parkway Street which requires realignment. Bicyclists already share the road with traffic on this arterial, but there is little concern of slowing car traffic given the spacing of the traffic signals, the wide right-of-way, and general roadway geometry. Locations where bicyclists may cross this major road, such as at Madison Street Drive, Township Drive, Valley View/Parade City Road, West Road, Riley Street, East Highway Street, School Street, Oak Avenue, Madison Drive, and East Madison Street, should provide additional signage with signal detectors and adequate green time for bicyclists to safely cross due to the street.

Harding-Wilson Creek (West Leg)

This recreation trail is partially completed between Oak Avenue and east of Parkway Drive. An important segment of Harding Creek, between the signal at Folsom Middle School and Oak Avenue is under construction. Key elements of this trail for bicyclists include a grade separated crossing at East Highway Street, the trail directly in Folsom Jr. High School, and typical advanced crossings of Oak Avenue Parkway. The eastern end of Harding Creek is strategically placed, serving as a connection with regional crossing Green Valley Road and connecting with the Folsom Lake Trail. This section will be constructed as part of future development in the area.

PROJECT #2:

BLUE RAVINE ROAD - HUMBUG-WILLOW CREEK TRAILS

Primary Responsibility:	Parks & Recreation (trails) Public Works (bike lanes)
Right-of-Way Control:	City, some private property will require easements or dedications
Required Actions/Studies:	CEQA clearance, trail and crossing design, new easements

This corridor, which consists of several distinct and generally parallel bike lanes and paths, was ranked as the second most important bikeway improvement in Folsom. This corridor serves more bicyclists than any other single corridor in the City. Blue Ravine Road and the Humbug/Willow Creek Trails are considered together for the simple reason that some bicyclists prefer to use off-road pathways while others prefer riding on the side of roadways. In general, bicycle commuters will use the Blue Ravine Bike Lanes while recreational bicyclists will use the Humbug-Willow Creek in tandem.

Blue Ravine Road

This major arterial already provides bike lanes for virtually its entire length. There is a short gap in the existing bike lanes between Manseau Drive and East Natoma Street which require installation. Bicyclists complain about the speed of traffic on this arterial, but there is little method of slowing this traffic given the spacing of the traffic signals, the wide right-of-way, and general roadway geometry. Locations where bicyclists must cross Blue Ravine Road, namely at Natoma Station Drive, Turnpike Drive, Sibley Street/Prairie City Road, Russi Road, Riley Street, East Bidwell Street, School Street, Oak Avenue, Manseau Drive, and East Natoma Street should provide signalized crossings with signal detectors and adequate green time for bicyclists to safely cross this wide street.

Humbug-Willow Creek (North Leg)

This creekside trail is partially constructed between Oak Avenue and east of Parkway Drive. An important segment of Humbug Creek, between the signal at Folsom Middle School and Oak Avenue is under construction. Key elements of this trail for bicyclists include a grade separated crossing at East Bidwell, access from the trail directly to Folsom Jr. High School, some type of enhanced crossing of Oak Avenue Parkway. The eastern end of Humbug Creek is conceptually shown turning northward and eventually crossing Green Valley Road and connecting with the Folsom Lake Trail. This section will be constructed as part of future development in the area.

Humbug-Willow Creek (South Leg)

This trail serves the heart of Folsom and is already heavily used on the completed sections, which includes a segment between Folsom Boulevard and Glenn Drive and another segment between Sibley Street and mid-way between Riley and East Bidwell Streets. The missing segment between Glenn Drive and Sibley Street is not identified on the plan mostly because it duplicates the proposed rail trail which would run parallel within a few hundred feet through this section. The portion of the Willow Creek Trail near Riley Street extending to East Bidwell, Oak Avenue Parkway, and Golf Links Drive is considered one of the top priorities of the City. Some of this trail will be constructed as part of future development projects, while other portions will require City, state, regional, and Federal funding sources. A long term alignment of the trail also extends southeast along the perimeter of a future golf course community (near Russell Ranch Road) to a terminus at Iron Point Road. The feasibility and alignment of this segment needs to be developed as the development plans for this area are submitted.

Other specific improvements to the Humbug-Willow Creek Trail include crossing improvements at: (a) Folsom Boulevard near Parkshore Drive, (b) Sibley Street/Prairie City Road, (c) Blue Ravine Road near Riley, (d) East Bidwell Street, (e) Oak Avenue Parkway, (f) Prewitt Drive, (g) Golf Links Drive, (h) Oak Avenue, and (i) under-crossings at Blue Ravine Road (in two locations), Sibley Street, Riley Street, and East Bidwell Street.

PROJECT #3:**ACCESS TO THE NEW HISTORIC TRUSS BICYCLE BRIDGE AND THE NEW AMERICAN RIVER BRIDGE**

Primary Responsibility:	Parks & Recreation (trails) Public Works (on-street)
Right-of-Way Control:	City, possibly some easements required for new access routes
Required Actions/Studies:	Crossing and Trail Design, possibly traffic study

Completion of the American River Bridge in 1999 will provide an important bicycle connection on the Folsom Boulevard and Folsom-Auburn Road corridor. The American River Bridge is being designed to provide both bike lanes and a pedestrian walkway. Access to the American River Bridge for bicyclists will be primarily from Folsom Boulevard, Folsom-Auburn Road, Greenback Lane, and Natoma Street. The bridge and access routes are or will be heavily traveled arterial roadways which may not appeal to recreational bicyclists. Crossing these roadways to reach the bridge will also require bicyclists to negotiate signalized intersections with very high traffic volumes.

The Historic Truss Bicycle Bridge will provide a quieter alternative to the American River Bridge, being for bicycles and pedestrians only, and will also provide a more direct connection for the American River Bikeway and the East Lake Natoma Trail. The bridge, which was originally at this site and removed many years ago to Siskiyou County, is currently being returned and re-assembled with a planned opening in 1999. A new access trail will be constructed on the southern approach from the Leidesdorff Street/Old Canal Pathway (on the old railroad right-of-way leading to Folsom Prison), and a direct connection to the American River Bikeway on the north side. New access improvements could include a new pathway connection to Riley Street on the north side and a more direct connection to the Leidesdorff Street Pathway utilizing an easement.

The construction of these bridges and the gap in the existing bicycle facilities connecting to them, make enhanced on and off-road bikeway connections a high priority for these sites. Improved connections will facilitate movement to the East Lake Natoma Trail, American River Bikeway, and the future Folsom Boulevard Rail Trail. Additionally, direct on-street connections will be made to Folsom Boulevard, Folsom-Auburn Road, Greenback Lane, and Natoma Street.

PROJECT #4: EAST-WEST (PG&E) TRAIL

Primary Responsibility: Parks & Recreation

Right-of-Way Control: PG&E, SMUD, State Prison

Required Actions/Studies: Easements, CEQA Clearance, Trail and Crossing Design

The East-West Trail on the PG&E corridor between Oak Avenue Parkway and the Historic Truss Bridge, City Hall complex, and downtown represents an important connection for recreational and commuter bicyclists in Folsom. Bicyclists currently coming anywhere from the eastern half of the City and headed downtown, the City Hall complex, or the Rainbow Bridge have relatively few options without having to use narrow streets in the older parts of the city. One option is to use Riley Street to Natoma Street, or East Natoma Street all the way to Folsom Boulevard. These alignments do provide direct connections for many destinations or neighborhoods, however. The East-West Trail provides an excellent alternative for bicyclists to using busy arterial streets or narrow older streets with no bike lanes.

Phase I of the trail would start at the current terminus of Oak Avenue Parkway at Willow Creek Drive. The paved 10-foot wide trail would be located within the wide PG&E right-of-way (estimated to be about 200 feet in width) so as to minimize impacts to neighbors, environmental impacts, and a potential future extension of Oak Avenue Parkway. The right-of-way is already well-used by the local neighborhoods; formalizing the pathway would help to increase maintenance and security.

Key implementation items include a crossing of East Natoma near Montrose Drive.

There are several alignment options for the western part of this project. **Option #1** includes a connection with a new pathway being constructed by Folsom State Prison. This new pathway is being completed primarily to provide prison employees with an off-road route to the prison from East Natoma. It is proposed that this trail be extended down to the old railroad right-of-way along the American River, and then tied back to the existing pathway and to the Historic Truss Bridge.

Option #2 is to keep the trail on the PG&E right-of-way to the north of City Hall, and tying into the existing pathway. This alignment includes a deep canyon with thick vegetation which could be costly to construct and difficult to maintain.

Option #3 is to route trail users onto East Natoma Street to the City Hall Complex, and then direct them through the park areas to the existing trail leading up to the Zoo from Leidesdorff Street. This option would be the least expensive but also require trail users to ride on several blocks of East Natoma that currently do not have bike lanes.

Phase II of the project would extend east to Blue Ravine Road and eventually into El Dorado County. The first portion of this project, from the proposed extension of Oak Avenue Parkway to Willow Creek Drive, already exists with a winding concrete pathway. East of this point there may be conflicts with other proposed land uses in the corridor, although a trail could probably be provided with minimal impacts to most development projects. A grade separated or signalized crossing of Blue Ravine Road would need to be included as part of this project.

PROJECT #5:**EAST LAKE NATOMA TRAIL/AMERICAN RIVER
BIKEWAY TRAIL AND ACCESS IMPROVEMENTS**

Primary Responsibility:	City Parks & Recreation State Parks & Recreation
Right-of-Way Control:	State, City, U.S. Bureau of Reclamation
Required Actions/Studies:	Easements, CEQA & NEPA Clearance, Trail and Crossing Design

The East Lake Natoma Trail is under the jurisdiction of and is being developed by the State Department of Parks & Recreation as a complement to the American River Bikeway. The trail is already developed from a point just south of Willow Creek to a point near Young Wo Drive. The southern portion leading into Sacramento County is being designed by the State, including a new bridge over Alder Creek. The northern portion has been designed as well, and will be funded partially through the American River Bridge project (which the trail will cross under) and partially by a hotel expansion project and other sources. The trail will be designed to ultimately connect to a crossing of Riley Street, connecting directly to the Leidesdorff pathway and from there to either the Historic Truss Bridge or along the canal to the City Park and the future Folsom Prison and East-West (PG&E) Trail. All of these improvements are already underway through the State at this juncture and require certain City involvement.

The City may wish to help develop several new access trails to the East Lake Natoma Trail, including one access point near Iron Point Road and another on Willow Creek leading to Blue Ravine Road. These improvements could be accomplished in conjunction with the California Department of Parks and Recreation.

The American River Bikeway is completed through Folsom and linked with the lower American River Parkway, it is recognized as one of the premier off-road pathway systems in the United States. Access to the Bikeway in Folsom was identified as constrained through surveys and public workshops, however. Specifically, access at the Negro Bar State Park Access Road from Greenback Lane was identified as being problematic, which will be addressed when the new American River Bridge is completed and a new access pathway is constructed to the Bikeway. Access to the Bikeway from the Folsom-Auburn Road is also problematic, an improved crossing for residents across Folsom-Auburn Road at Inwood Drive onto the Bikeway is required. This crossing would provide a direct connection to Carl Sundahl Elementary School.

PROJECT #6: RILEY BIKE LANES AND PATHWAY

Primary Responsibility: Public Works (on-street)
Parks & Recreation (off-street)
Right-of-Way Control: City
Required Actions/Studies: Bike lane design, Trail and Crossing Design

Riley Street is the only bicycle corridor connecting southeast Folsom with central Folsom, including numerous schools, parks, and employment centers. Riley currently has bike lanes for almost its entire length, but the street itself is discontinuous with a major gap at Willow Creek. While Riley will eventually be completed through this section with bike lanes, a new trail connecting these two segments is proposed, including a new crossing of Willow Creek and of Blue Ravine Road. The other part of this project would be the completion of the existing bike lanes on Riley from Coloma Way to Natoma Street, thereby completing an important linkage in the community bike lane system. The feasibility of installing bike lanes on this segment is largely dependent on traffic volumes on Riley after the American River Bridge is completed.

PROJECT #7:

FOOTHILL RAIL TRAIL

Primary Responsibility: Parks & Recreation
Right-of-Way Control: City, County
Required Actions/Studies: CEQA clearance, Trail and Crossing Design

The Foothill Rail Trail is a proposed multi-use pathway along the abandoned right-of-way of the Southern Pacific Railroad Placerville Branch, starting at the Folsom Rail Trail near Bidwell Street/Folsom Boulevard intersection. The trail leads through the heart of Folsom eventually turning southeasterly along East Bidwell Street and under S.R. 50 towards El Dorado County. The alignment is being considered variously for recreational and commuter rail, which will impact the location of any trail within the corridor. The trail would be used by both recreational and commuter bicyclists, providing a direct connection to employment centers in East Folsom and to the future light rail transit line. This corridor also runs adjacent to the Consumnes River Community College.

Key implementation issues include: (1) methods of sharing the right-of-way with future rail service, (2) crossings of Sibley, Blue Ravine, East Bidwell, Oak Avenue Parkway, and Iron Point Road, (3) integration into other nearby bikeways including the Willow Creek and Humbug Creek systems, (4) coordination with El Dorado County and Sacramento County on their portions of the right-of-way, and (5) potential neighborhood concerns about privacy, noises, and other impacts.

PROJECT #8:

NATOMA/EAST NATOMA BIKEWAY CORRIDOR

Primary Responsibility:	Parks & Recreation (off-street) Public Works (on-street)
Right-of-Way Control:	City
Required Actions/Studies:	Bike lane design, possibly traffic analysis, trail and crossing Design

This corridor already provides bike lanes through the older part of Folsom and along much of its length to Green Valley Road, but also requires improvements. This includes minor striping on the western end to ensure the bike lanes meet Caltrans standards, installation of bike lanes from Stafford Street to Cimarron Circle, and improvements to the existing pathway on the south side of the road, east of Cimarron Circle. The most crucial improvement, installing bike lanes near City Hall, warrants a traffic analysis in order to determine if traffic lanes can be reduced.

PROJECT #9: SCHOOL STREET-WALES DRIVE BIKEWAY CORRIDOR & BICYCLE BOULEVARD

Primary Responsibility: Public Works (on-street)

Right-of-Way Control: City

Required Actions/Studies: Traffic calming study and design (if needed)

Bicycle travel in central Folsom is problematic due to two factors: (1) existing streets such as East Bidwell Street carry high traffic volumes and are too narrow to provide bike lanes and (b) the number of schools and commercial destinations make it popular with bicyclists, especially younger students. The School-Wales corridor is already a popular bike route alternative to using East Bidwell Street, and also provides a direct connection to the City Hall complex.

The current street widths (between 40' and 44') cannot accommodate bike lanes without eliminating on-street parking. There are several options which can be selected to enhance the safety and usability of this corridor for bicyclists:

1. Develop combination parking/bike lanes, which prohibit parking between 8am and 5pm so that bicyclists (especially children) have a safe place to ride.
2. Develop shoulder striping that provides 10' wide travel lanes to help slow traffic and provide bicyclists with a small refuge area.
3. Enhance intersection controls so that bicyclists can access and use the corridor, especially at Blue Ravine Road and East Natoma Street.
4. Provide traffic calming features such as traffic circles, chicanes, neck-downs as needed to help control the flow and speed of traffic through this neighborhood.
5. Provide a Bicycle Boulevard along School Street. Reduce through automobile traffic, maintain on-street parking, and encourage and promote bicycle travel along the corridor.

PROJECT #10:**FOLSOM PARKWAY RAIL TRAIL**

Primary Responsibility: Parks & Recreation**Right-of-Way Control:** City, RTA**Required Actions/Studies:** Integration of trail design into LRT design, trail and crossing design

The Folsom Rail Trail is a proposed Class I facility utilizing the old Southern Pacific right-of-way along Folsom Boulevard. The alignment will be shared with the future light rail transit system. The rail trail will extend from the recently completed Highway 50 bicycle/pedestrian overcrossing at Aero Jet Road to Sutter Street in the downtown area, where it will connect with the future Foothills Rail Trail. The project will provide an off-road alternative for bicyclists to using Folsom Boulevard, as well as direct connections to the future light rail transit stations. Specific implementation issues include design coordination with the light rail transit engineers to ensure that adequate right-of-way and access is preserved for the rail trail, and design of the crossings of major streets such as Blue Ravine Road and Glenn Drive.

7.0 Design and Maintenance Standards

This chapter provides details on the recommended design and operating standards for the Folsom Bikeways System. (Standards for bicycle facilities during roadway construction are addressed in Appendix E.)

7.1 Existing Bicycle Design Standards and Classifications

National design standards for bikeways have been developed by the American Association of Highway and Transportation Officials (AASHTO) and the California Department of Transportation (Caltrans). The Caltrans Highway Design Manual, Chapter 1000: Bikeway Planning and Design, serves as the official design standard for all bicycle facilities in California.

Design standards in Chapter 1000 fall into two categories, mandatory and advisory. Caltrans advises that all standards in Chapter 1000 be followed, which also provides a measure of design immunity to the City. Not all possible design options are shown in Chapter 1000. For example, intersections, ramp entrances, rural roads, and a variety of pathway locations are not specified in the Caltrans Highway Design Manual.

The following section summarizes key operating and design definitions:

Bicycle	A device upon which any person may ride, propelled exclusively by human power through a belt, chain, or gears, and having either two or three wheels in tandem or tricycle arrangement.
Class I Bikeway	Variously called a bike path or multi-use trail. Provides for bicycle travel on a paved right of way completely separated from any street or highway.
Class II Bikeway	Referred to as a bike lane. Provides a striped lane for one-way travel on a street or highway.
Class III Bikeway	Referred to as a bike route. Provides for shared use with pedestrian or motor vehicle traffic.

Graphic descriptions of Class I, II, and III bikeways are shown in Figure 1 on page 14.

7.2 General Design Recommendations

7.2.1 Conform to Caltrans Design Guidelines for All Bikeways

1. All designated Class I, II, or III bicycle facilities should conform to the Caltrans Highway

Design Manual Chapter. Where facilities do not meet this criteria, they should not be referred to as a Class I, II, or III.

7.3 Class I, II and III Bikeway Design Guidelines

The following guidelines present the recommended minimum design standards and ancillary support items for Class I bike paths (also referred to as multi-use trails), Class II bike lanes, and Class III bike routes.

7.3.1 *All Class I bike paths should generally conform to the design recommendations in Table 8 and Figure 8.*

1. Multi-use trails and unpaved facilities that serve primarily a recreation rather than a transportation function and will not be funded with federal transportation dollars may not need to be designed to Caltrans standards.
2. Class I bike path crossings of roadways require preliminary design review. A prototype design is presented in Figure 9. According to a variety of research documents including a 1997 University of North Carolina study, bike paths that cross roadways with Average Daily Traffic (ADTs) over 20,000 vehicles will require signalization or grade separation.
3. Landscaping should generally be low water native vegetation.
4. Lighting should be provided where the bike path will be used by commuters.
5. Barriers at pathway entrances should be clearly marked with reflectors and ADA accessible (min. 5 feet clearance).
6. Bike path construction shall take into account impacts of maintenance and emergency vehicles on shoulders, weight and vertical requirements.
7. Provide 2 feet wide unpaved shoulders for pedestrians/runners, or a separate tread way where feasible. Direct pedestrians to right side of pathway with signing and stenciling.
8. Provide adequate trailhead parking and other facilities such as restrooms, drinking fountains) and appropriate locations.

Table 8: Class I Bicycle Path Specifications

Pavement Type:	Recycled Asphalt	3"	(75 mm)
	Asphalt ¹	3"	(75 mm)
	Concrete ²	3"	(75 mm)
Sub-Base:	Granite	4-6"	(100-150 mm)
	Gravel	4-6"	(100-150 mm)
Shoulders:	Decomposed Granite	2-4"	(50-100 mm)
Width:	Minimum 1-way Path	5'	(1.5 m)
	Minimum 2-way Path	10'	(3.1 m)
	Preferred 2-way Path	12-15'	(3.6-4.6 m)
Shoulders:		2-3'	(0.6-1.0 m)
Lateral Clearance:		2-3'	(0.6-1.0 m)
Vertical Clearance:		8-10'	(2.5-3.0 m)
	w/Equestrians	12'	(3.6 m)
Striping:			
	Centerline (none, dashed yellow, solid yellow)	4"	(100 mm)
	Edgeline (none or solid white)	4"	(100 mm)
Signing:	(See Caltrans Traffic Manual and MUTCD)		
Minimum Cross Slope:		2%	2%
Minimum Separation from Roadway: ³		5'	(1.5 m)
Design Speed:		20-30 mph	(40-50 kph)
Maximum Super Elevation:		5%	5%
Maximum Grades (over 100'):		5%	5%
Removable Bollards (minimum spacing):		5'	(1.5 m)
Lighting (if night use is expected):		5-22 LUX	5-22 LUX
Source:	(Caltrans Highway Design Manual, Chapter 1000)		

¹ Asphalt may be unsuitable for bike paths in stream channels due to asphalt oils. Concrete paving is recommended in areas where the trail is subject to regular water flow.

² A 6" concrete thickness may be use directly on compacted native material.

³ Unless a physical barrier is provided.

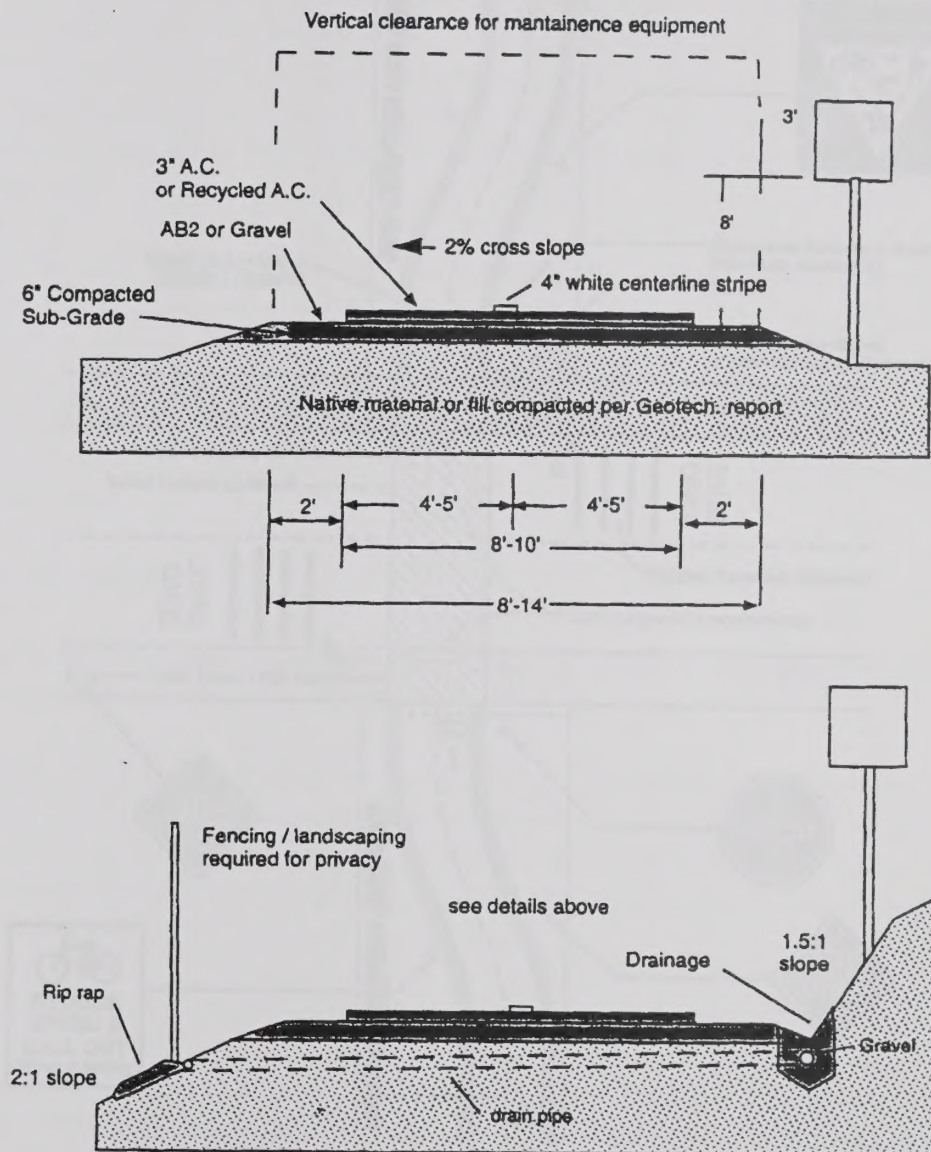


Figure 8: Class I Bicycle Path Cross Section

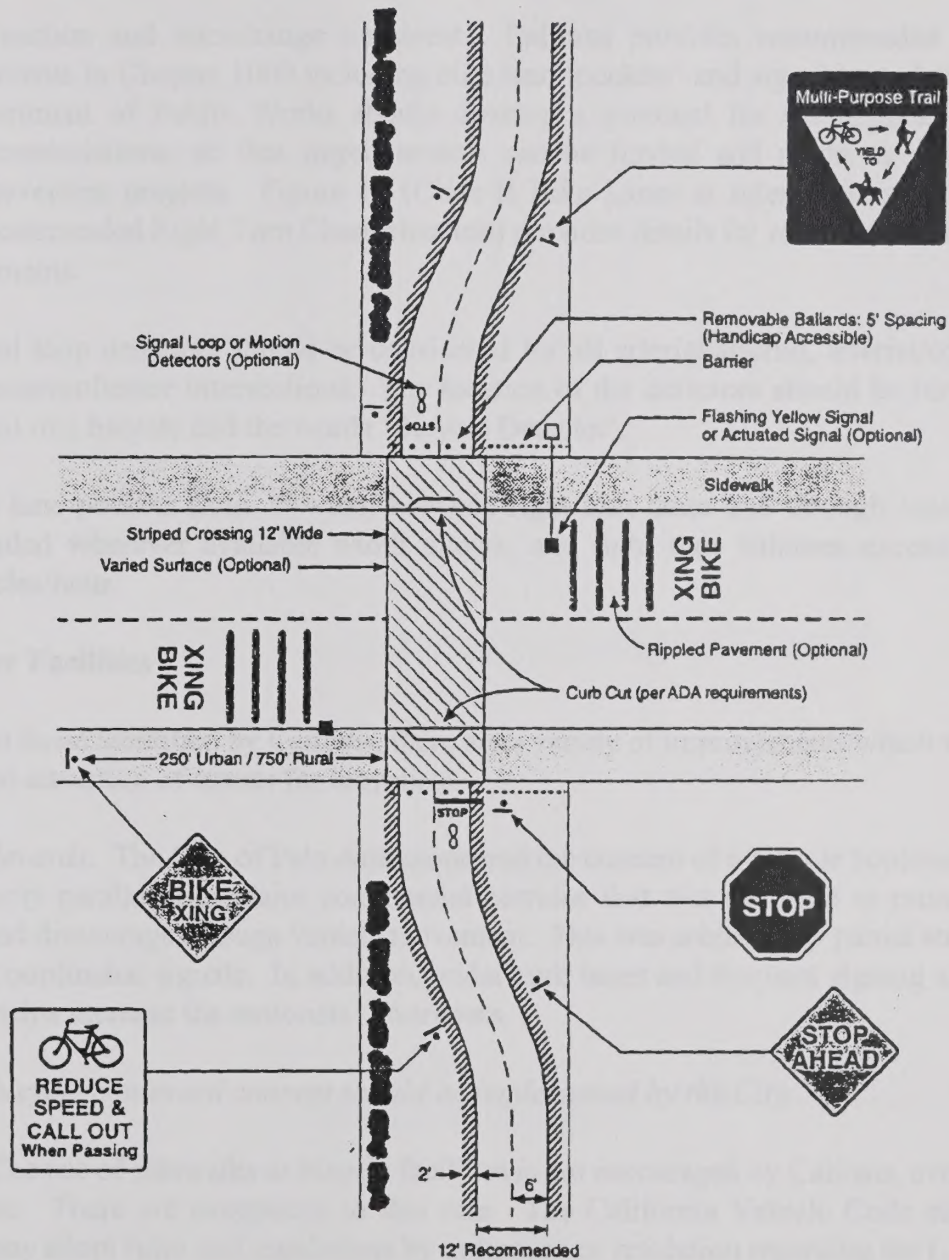


Figure 9: Class I Bicycle Path Crossing Prototype

7.3.2: *All Class II bike lanes should generally conform to the design recommendations in Figure 10 and Table 9.*

1. Intersection and interchange treatment. Caltrans provides recommended intersection treatments in Chapter 1000 including bike lane 'pockets' and signal loop detectors. The Department of Public Works should develop a protocol for the application of these recommendations, so that improvements can be funded and made as part of regular improvement projects. Figure 11 (Class II Bike Lanes at Intersections) and Figure 12 (Recommended Right Turn Channelization) provides details for recommended intersection treatments.
2. Signal loop detectors should be considered for all arterial/arterial, arterial/collector, and collector/collector intersections. The location of the detectors should be identified by a stencil of a bicycle and the words 'Bicycle Detector'.
3. Bike lane pockets (min. 4' wide) between right turn lanes and through lanes should be provided wherever available width allows, and right turn volumes exceed 150 motor vehicles/hour.

7.4 Other Facilities

In addition to those identified by Caltrans, there are a variety of improvements which will enhance the safety and attraction of streets for bicyclists.

Bicycle Boulevards. The City of Palo Alto pioneered the concept of a bicycle boulevard, which is a street directly parallel to a major commercial corridor that was designed to promote bicycle movement and discourage through vehicle movement. This was achieved by partial street closures and lack of coordinated signals. In addition, wider curb lanes and frequent signing as a 'Bicycle Boulevard' helps increase the motorists' awareness.

7.4.1: *The bicycle boulevard concept should be implemented by the City.*

Sidewalks. The use of sidewalks as bicycle facilities is not encouraged by Caltrans, even as a Class III bike route. There are exceptions to this rule. The California Vehicle Code states: 'Local authorities may adopt rules and regulations by ordinance or resolution regarding the (...) operation of bicycles (...) on the public sidewalks.' (CA VC 21100, Subdiv. H). Caltrans adds in Chapter 1000: 'In residential areas, sidewalk riding by young children too inexperienced to ride in the street is common. With lower bicycle speeds and lower auto speeds, potential conflicts are somewhat

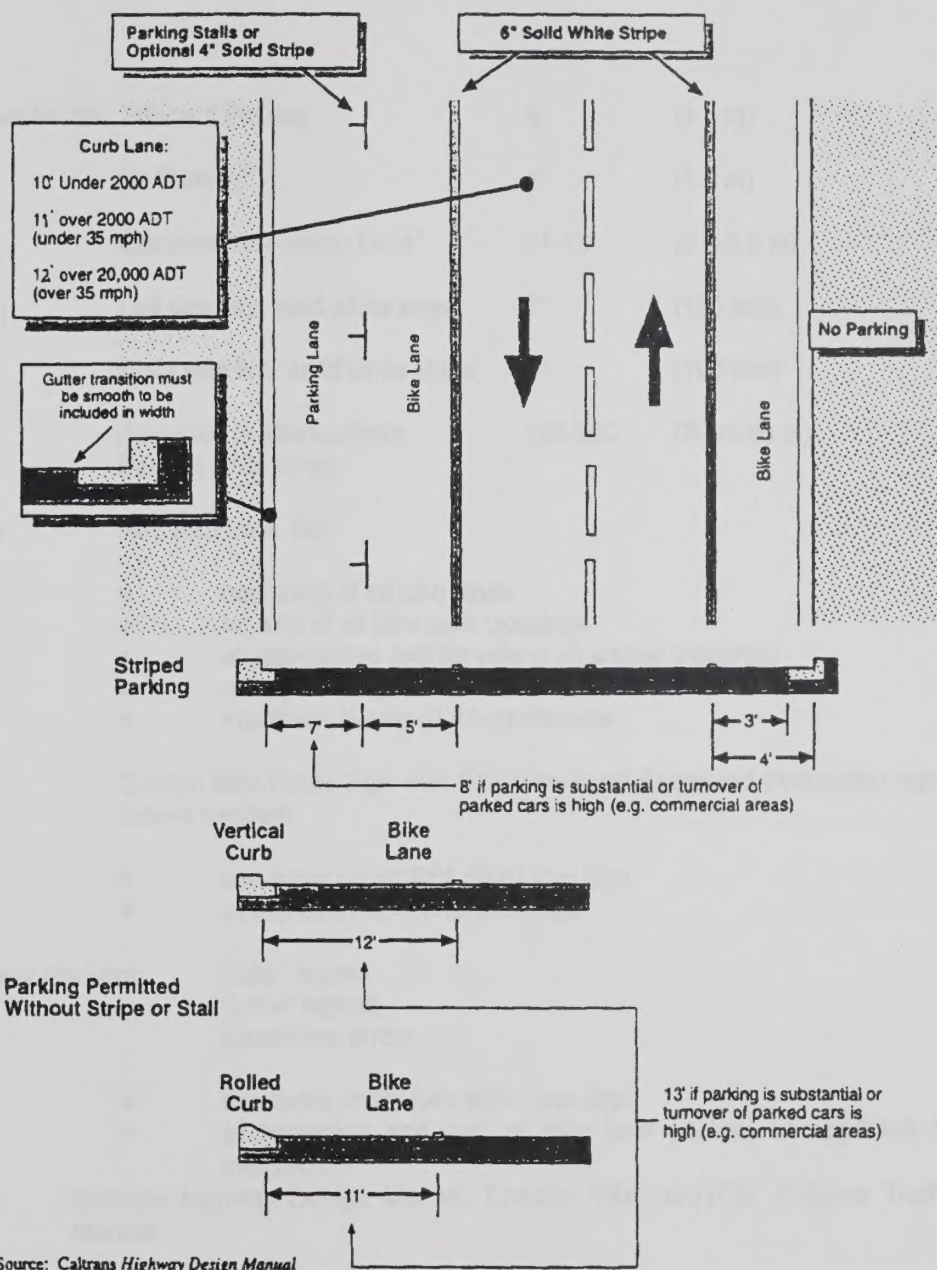


Figure 10: Class II Bike Lane Cross Section

Table 9: Class II Bike Lane Specifications

Minimum Widths Adjacent Parking	5'	(1.5 m)
No Parking ⁴	4'	(1.2 m)
Combination Parking Lane ⁵	11-13'	(3.3-3.9 m)
Striping	Left side line: solid white stripe	6" (150 mm)
	Right side line: solid white stripe	4" (100 mm)
	Approach to intersections: Dashed white stripe	100-200' (30 m-60 m)
Signing	R81 Bike Lane Sign	
	- beginning of all bike lanes - far side of all bike path crossings - at approaches and far side of all arterial crossings - at major changes in direction - maximum ½ mile (0.8 km) intervals	
	Custom Bike Route Sign with G33 Directional Arrow and destination signs (where needed)	
	- see items under R81 Bike Lane Sign - at approach to arterial crossings	
Pavement Markings	"Bike" legend "Lane" legend Directional arrow	
	- see items under R81 Bike Lane Sign - at beginning and end of bike lane pockets at approach to intersection	
Source:	Caltrans Highway Design Manual, Chapter 1000, MUTCD, Caltrans Traffic Manual	

⁴ Minimum 3' (.9 m) between stripe and gutter joint.

⁵ Rolled curb, 11' (3.3 m), vertical curb, 12' (3.6 m), 13' (3.9 m) recommended with significant parking or turnover.

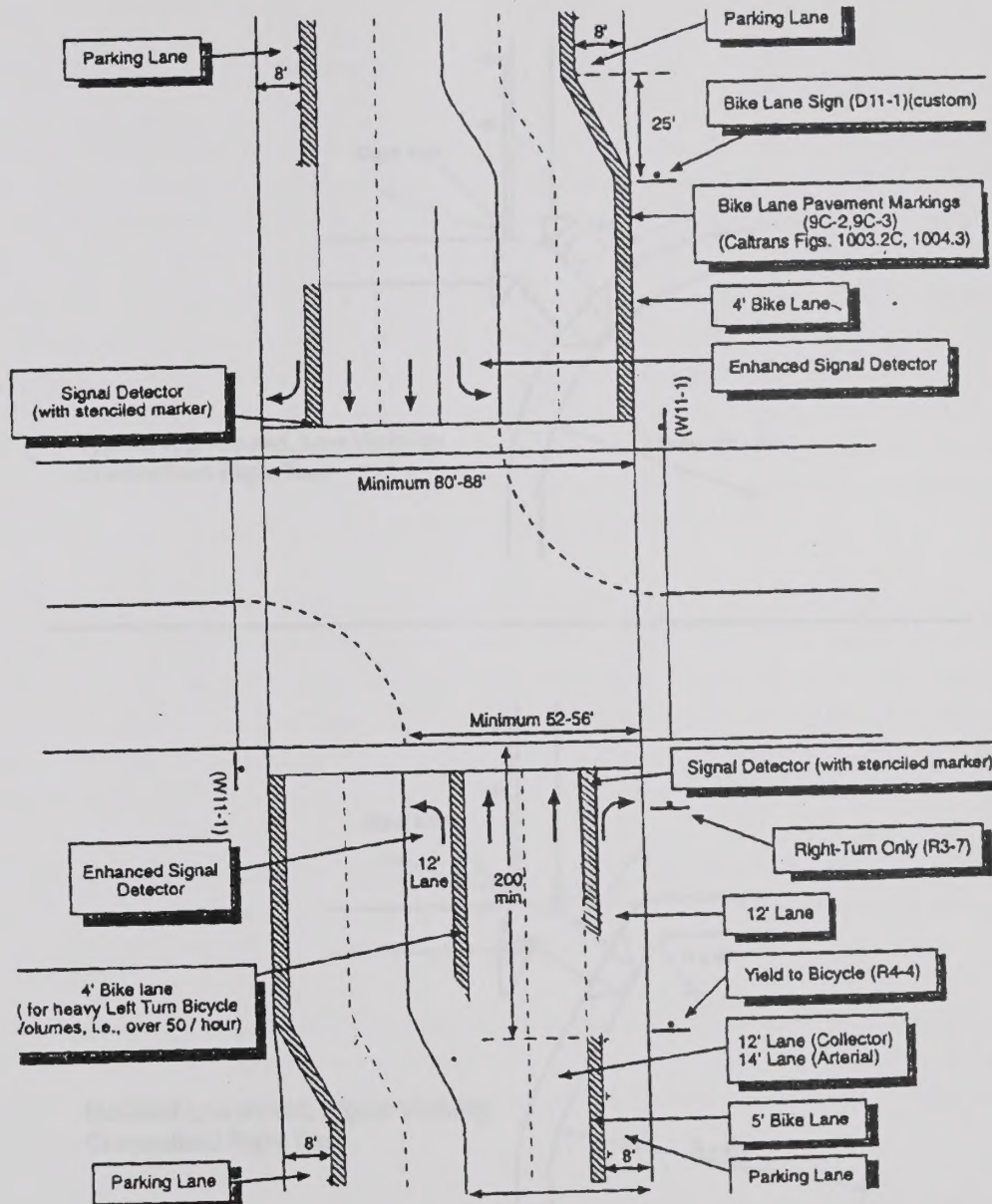


Figure 11: Bike Lane Intersection Design

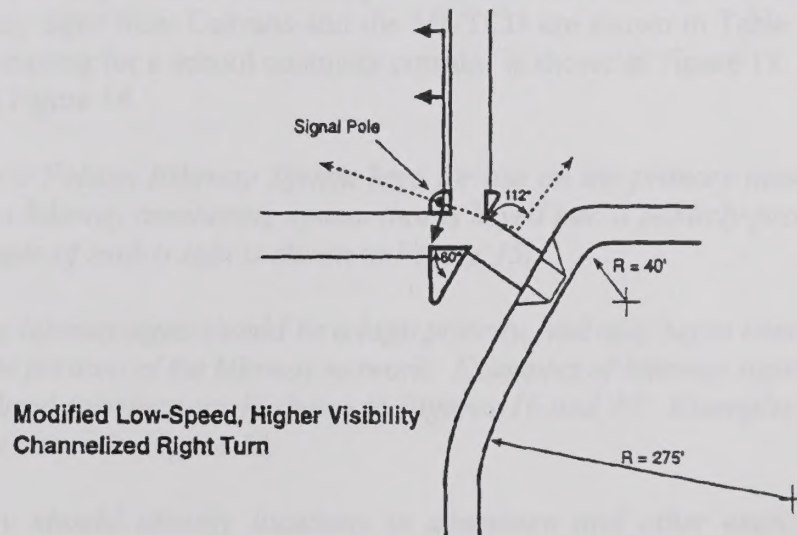
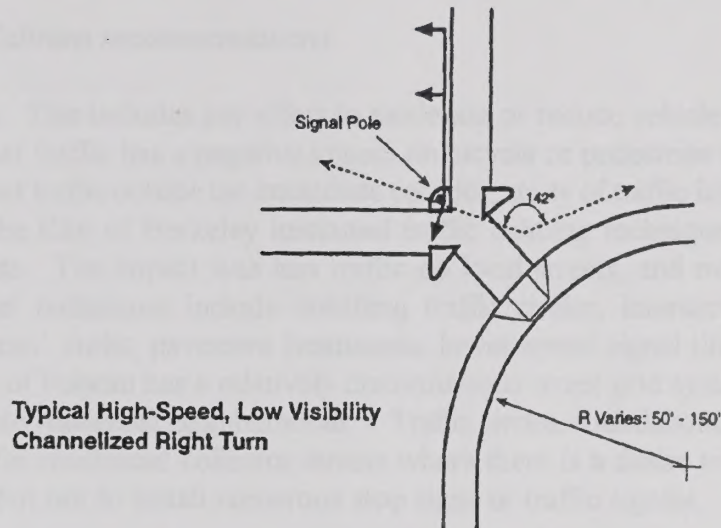


Figure 12: Recommended Right Turn Channelization

lessened, but still exist. But it is inappropriate to sign these facilities as bikeways. Bicyclists should not be encouraged (through signing) to ride facilities that are not designed to accommodate bicycle travel.'

7.4.2: *Adopt Caltrans recommendations.*

Traffic Calming. This includes any effort to moderate or reduce vehicle speeds and/or volumes on streets where that traffic has a negative impact on bicycle or pedestrian movement. Because these efforts may impact traffic outside the immediate corridor, study of traffic impacts is typically required. For example, the City of Berkeley instituted traffic calming techniques by blocking access into residential streets. The impact was less traffic on local streets, and more traffic on arterials and collectors. Other techniques include installing traffic circles, intersection islands, partial street closings, 'bulb-out' curbs, pavement treatments, lower speed signal timing, and narrowing travel lanes. The City of Folsom has a relatively discontinuous street grid system with limited filtering of through traffic into residential neighborhoods. Traffic circles, roundabouts, and other measures may be considered for residential collector streets where there is a desire to control travel speeds and traffic volumes but not to install numerous stop signs or traffic signals.

Signing and Striping. All bikeway signing in Folsom should conform to the signing identified in the Caltrans Traffic Manual and/or the Manual on Uniform Traffic Control Devices (MUTCD). These documents give specific information on the type and location of signing for the primary bike system. A list of bikeway signs from Caltrans and the MUTCD are shown in Table 10 (List of Bikeway Signs). Typical signing for a school commute corridor is shown in Figure 13. A typical bike route sign is shown in Figure 14.

7.4.3: *Develop a Folsom Bikeway System logo for use on the primary network. This sign may include a bikeway numbering system that is keyed into a publicly-produced bikeway map. An example of such a sign is shown in Figure 15.*

7.4.4: *Installing bikeway signs should be a high priority, and may begin immediately on Class III bike route portions of the bikeway network. Examples of bikeway signing at signalized and unsignalized intersections is shown in Figures 16 and 17. Examples of bikeway warning signs are shown in Figure 18.*

7.4.5: *The City should identify locations in downtown and other employment areas where centralized public covered bicycle parking can be installed, such as parking lots. These facilities may charge a small user fee and/or be subsidized by nearby employers.*

Table 10: Recommended Signing and Marking

BIKE PATH SIGNS

For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
Yes	Bike Path-No Motor Vehicles or Motorized Bicycles	Entrance to trail	B on W	R44A	N/A
No	No Motor Vehicles	Entrances to trail	B on W	N/A	R5-3
Yes	Trail Logo sign	Trail logo: at all trail entrances and major access points	Varies	N/A	N/A
Yes	Trail Regulations	All trail entrances (where people reading sign will not block trail)	B on W	N/A	N/A
Yes	Trail Curfew 10PM - 5AM	Based on local ordinance	R on W	N/A	N/A
Yes	Multi-purpose Trail: Bikes Yield to Pedestrians/Horses	All trail entrances		N/A	N/A
Yes	Bikes Reduce Speed & Call Out Before Passing	Every 2,000 feet	B on W	N/A	N/A
Yes	Keep Left Peds Right Bikes Keep Right Peds Left Bikes	Every 1000-2000 feet where ped and bike areas are designated	B on W	N/A	R9-7
Yes	Please Stay on Trail	In environmentally-sensitive areas		N/A	N/A
Yes	Speed Limit Signs	Where speed limits should be reduced From the trails design speed	B on W	R2	R2-1
Yes	Caution: Storm Damaged Trail	Storm damaged locations	B on Y	N/A	N/A
Yes	Trail Closed: No Entry Until Made Accessible & safe for Public Use	Where trail or access points closed due to hazardous conditions	B on W	N/A	N/A
Yes	STOP	At trail intersections with roads and other primary trails	W on R	R1	R1-1
Yes	YIELD		W on R	R1-2	R1-2
Yes	Bicycle Push Button for Green Light	Above push button at signal	B on W	R62C	N/A
Yes	Bicycle Use Ped Signal	For ped signal at cross walks	B on W	N/A	R9-5
Yes	Bicycle Yield to Peds	Where facility is shared by peds	B on W	N/A	R9-6

Table 10 (cont'd.): Recommended Signing and Marking

BIKE PATH SIGNS (cont'd)

Yes	Bicycle Symbol	For motorists before/at uncontrolled trail crossings and roads with unexpected bikes	B on Y	W79	W11-1
Yes	STOP Ahead	Before unexpected STOP sign	B, R on Y	W17	W3-1a
Yes	YIELD Ahead	Before unexpected YIELD sign	B, R, W on	YW28	W3-2a
Yes	Signal Ahead	Before unexpected signal	B, R, G on	YW41	W3-3
Yes	Cross Traffic Does Not	Stop Below stop or yield using engineering judgment	B on W	SW1	N/A
Yes	Turns and Curves	Before turns and curves less than design speed specifications	B on Y	W1,2,3 W4,5,6,14 W56,57	W1-1,2 W1-4,5 W1-6,7
Yes	Trail Intersections	Before uncontrolled trail approach, or where visibility is limited	B on Y	W7,8,9	W2-1,2,3 W2-4,5
Yes	Bikeway Narrows	Before bikeway less than 8' wide	B on Y	W15 (mod)	W5-4
Yes	Narrow Bridge	Before bridge less than 12' wide	B on Y	W23	W5-2
Yes	Downgrade	Before sustained bikeway hill greater than 5%	B on Y	W29 (mod)	W7-5
Yes	Pedestrian Crossing	Where pedestrian walkway crosses trail	B on Y	W54	W11A-2
Yes	Restricted Vertical Clearance	Before vertical clearance less than 8'-6"	B on Y	W34	W12-2
Yes	Railroad Crossing	Before trail crosses railway tracks	B on Y	W47	W10-1

BIKE LANE SIGNS

For Use:	Sign Description	Location	Color	Caltrans Design.	MUTCD Design.
Yes	Bike Lane	Far side of intersections, etc.	B on W	R81	N/A
Yes	Begin	Beginning of bike lane	B on W	R81A	N/A
Yes	End	End-of bike lane	B on W	R81B	N/A
No	Bike Lane Ahead/Ends	At beginning/end of bike lanes	B on W	N/A	R3-16

Table 10 (cont'd): Recommended Signing and Marking

BIKE LANE SIGNS (cont'd)

For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
No	Right/Left/Curb Lane Bikes Only	Along bike lanes	B on W	N/A	R3-17
Yes	Right Lane Must Turn Right	At required vehicle right turns	B on W	R18	R3-7
No	Begin Right turn Here, Yield to Bikes	Where bike lanes end before intersection	B on W	N/A	R4-
Yes	No Parking Any Time	Where parking is prohibited	R on W	R26, 26A R28, 28A	R7-1
Yes	No Parking Bike Lane	Where parking is prohibited	B,R on W	N/A	R7-9, 9a
Yes	No Bikes Wrong Way	On back of signs visible to wrong way riders	B,R on W	N/A	N/A

BIKE ROUTE SIGNS

For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
Yes	Bike Route	Before intersections, etc.	W on G	G93	D11-1
Yes	Begin	Beginning of bike route	W on G	G93A	M4-11
Yes	End	End of bike route	W on G	G93B	M4-12
Yes	Arrows	Before intersections, etc.	W on G	G33-45	M7-1-7
Yes	Route Name	On primary named routes	W on G	S17	N/A
Yes	Logo Numbered Route	On logo numbered routes	W on G	SG45	M1-8, 9
Yes	Street name and Directional Signs (i.e., Beaches, Downtown, etc.)	At intersections where access to major destinations is available	W on G	G7 G8	D1-1 D1-1b(r1)

OTHER BIKE SIGNS

For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
Yes	Bicycle Parking	At bike parking locations	G on W	G93C	D4-3
Yes	Hazardous Condition	Before slippery or rough pavement, such as steel deck, ford, etc.	B on Y	W42 (mod)	W8-10

OTHER BIKE SIGNS (cont'd)

For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
Yes	Angled Railroad Crossing	Before angled tracks	B on W	SW27-1	N/A
Yes	No Bikes facility (sidewalks, etc.)	At entrance to prohibited	B, R on W	R95, 95A	R5-6
Yes	Pedestrians Bicycles Motor-Driven Cycles Prohibited	On Freeway on-ramps where bikes prohibited	B on W	R44	R5-10A, 10B
Yes	Bicycles Motor-Driven Cycles Must Exit	At ramp where bikes must exit a freeway	B on W	R44B, 44C	N/A

Table 10 (cont'd.): Recommended Signing and Marking

OTHER BIKE SIGNS (cont'd)

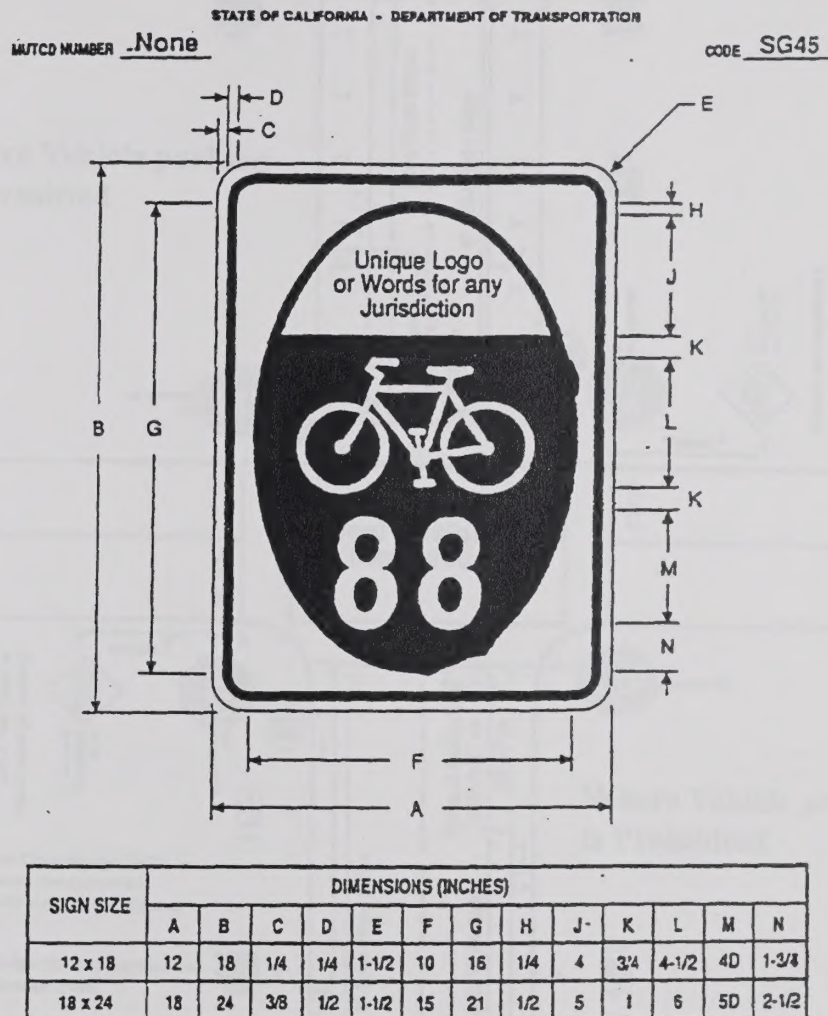
For Use:	Sign Description	Location	Color	Caltrans Designation	MUTCD Designation
Yes	Angled Railroad Crossing	Before angled tracks	B on W	SW27-1	N/A
Yes	No Bikes facility (sidewalks, etc.)	At entrance to prohibited	B, R on W	R95, 95A	R5-6
Yes	Pedestrians Bicycles Motor-Driven Cycles Prohibited	On Freeway on-ramps where bikes prohibited	B on W	R44	R5-10A, 10B
Yes	Bicycles Motor-Driven Cycles Must Exit	At ramp where bikes must exit a freeway	B on W	R44B, 44C	N/A

Figure 13: Signs and Marking within Signal Zones





Figure 14: Bike Route Sign



COLORS
 BORDER & LEGEND - GREEN (Reflective)
 BACKGROUND - WHITE (Reflective)

- THE POLICY FOR INTENDED USAGE OF THIS SIGN IS SHOWN ON REVERSE SIDE -

Figure 15: Numbered Bike Route Sign

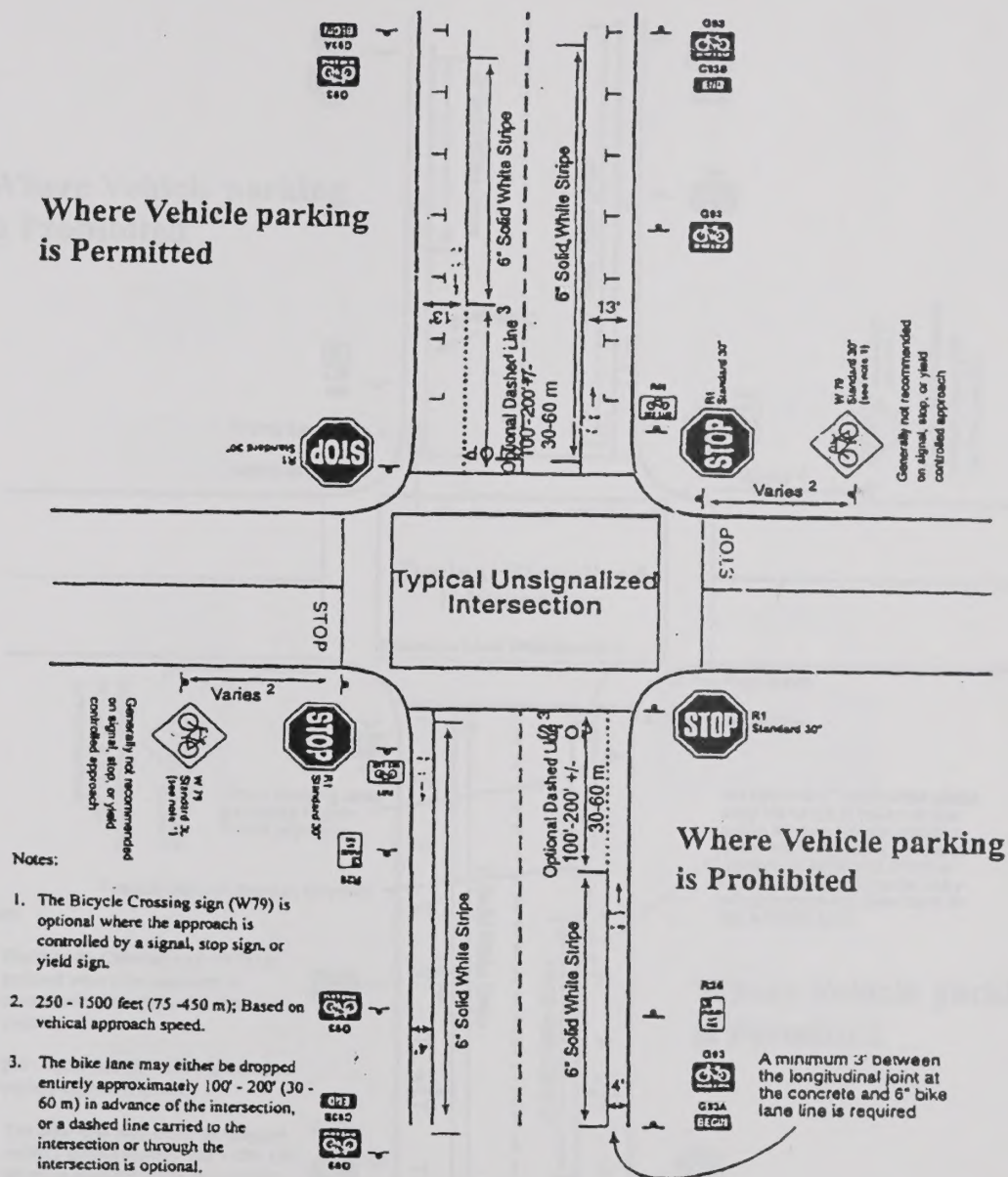


Figure 16: Signing at Unsignalized Intersections

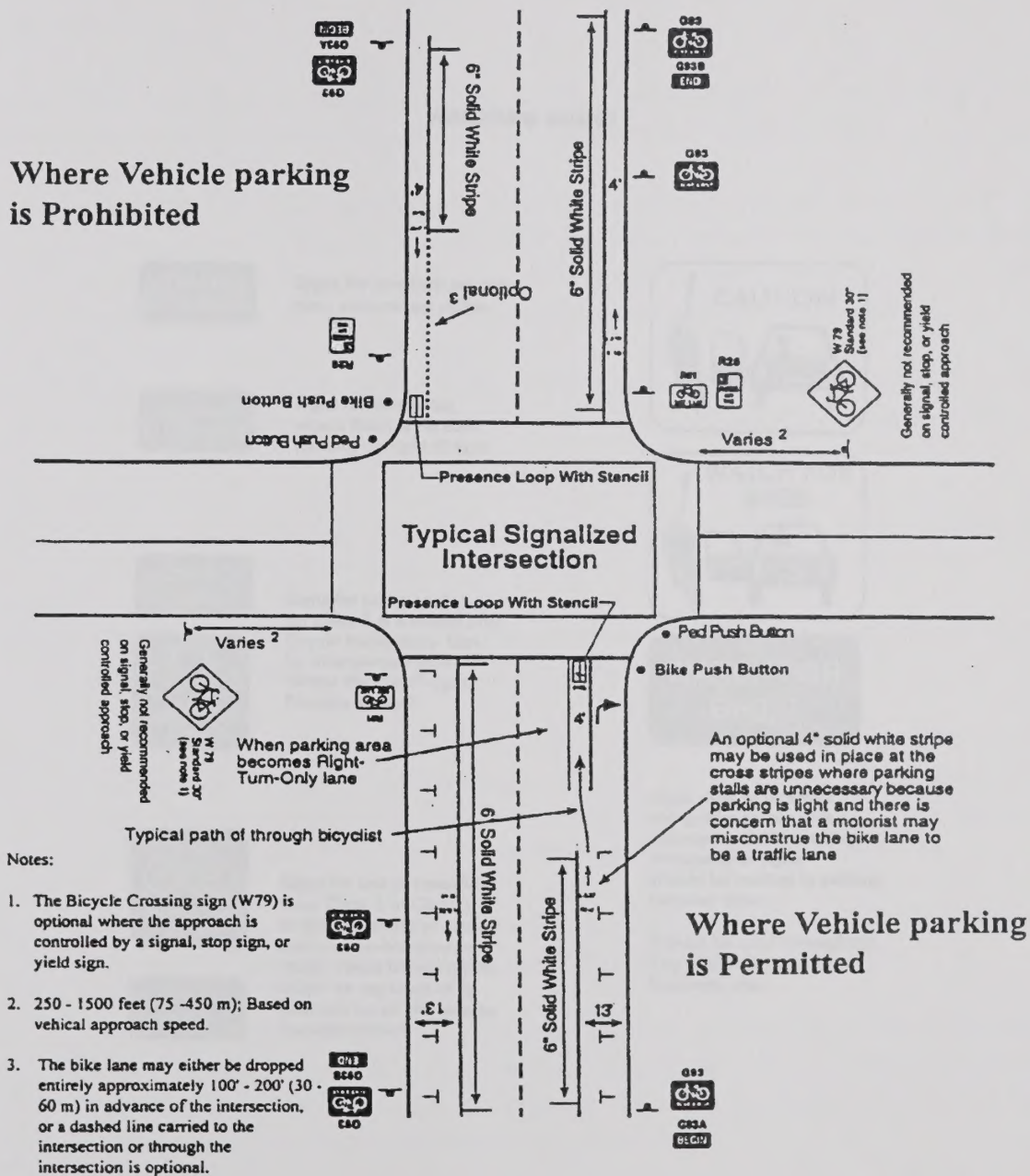
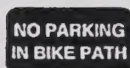
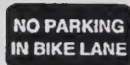


Figure 17: Signing at Signalized Intersections

WARNING SIGNS



Signs for locations on path near auto access points



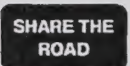
Signs for bike lanes where there is no auto parking on right of lane



Signs for occasional use on Class 2 & 3 routes and Bicycle Boulevards. Can be interspersed with "Share the Road" signs. Possible sticker?



Signs for use at transition from Class 2 to Class 3; at the beginning of routes; and on non-bicycle-route roads where bicycle traffic might be expected or at intervals on all city streets. Possible sticker?



Signs used at intervals along bike routes with adjacent parallel parking. Frequency of signs should be related to parking turnover rates.

Should be used throughout City at parallel parking locations, also.

Figure 18: Warning Signs

7.5 Monitoring, Maintenance, and Security

7.5.1 Monitoring

Once the plan has been adopted, a monitoring effort is required to ensure that the recommendations are enforced over time. The following actions are recommended to achieve this.

Action: Identify a bicycle coordinator position, preferably located in the Public Works, Planning, or Parks and Recreation Department, who will be responsible for many of the monitoring responsibilities. They will also be responsible for coordinating with planning, parks and recreation, police, and other departments.

Action: Plan Review. All development and infrastructure improvement plans shall be routed through the bicycle coordinator to ensure that bikeway segments are implemented, developer requirements are being met, and design standards adhered to.

Action: Accident monitoring. Bicycle-related accident data shall be collected annually from the police department and evaluated to determine areas of concern.

Action: Marketing/Public Awareness. The coordinator shall assist with promotional and educational events, safety fairs, and programs.

Action: Maintenance. The coordinator shall be responsible for an annual maintenance and operations budget, coordinating with the Public Works Department. The coordinator should track long term bike path maintenance, schedule repairs, and respond to calls from the public or staff regarding maintenance needs.

Action: Funding. The coordinator shall work closely with agencies such as Caltrans to keep abreast of funding opportunities and prepare application packages.

Action: Enforcement/Security. The coordinator shall be responsible for coordinating with the police department to provide needed enforcement and safety education along bike paths. Also, problems regarding security, privacy, vandalism, and crime along bike paths should be addressed through the coordinator.

7.5.2 Maintenance

The total average annual maintenance cost of the off-street bikeway system is estimated to be \$250,000 when it is fully implemented of which a substantial portion (about 1/3, or \$185,000/yr.) is associated with State Parks and Recreation Trails such as the East Lake Natoma Trail. All of the maintenance costs are associated with the proposed off-road bike paths, as bike lanes and routes are assumed to be maintained as part of routine roadway maintenance. Class I bike path maintenance costs are based on \$8,500 per mile, which covers labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, and bi-annual resurfacing and repair patrols.

Maintenance access on the Class I bike path will be achieved using standard City pick-up trucks on the pathway itself. Sections with narrow widths or other clearance restrictions should be clearly marked. Class I bike path maintenance includes cleaning, resurfacing and restriping the asphalt path, repairs to crossings, cleaning drainage systems, trash removal, and landscaping. Underbrush and weed abatement should be performed once in the late spring and again in mid-summer.

Class II maintenance is projected to have an average annual cost of \$100,000 over the next 20 years, and consists of the purchase and operation of street sweeping equipment. The bikeway program is not expected to cover 100% of the cost of additional street sweeping since the operation will also benefit motor vehicles, but will help pay for a portion of the additional costs.

- Action: All streets identified on the Folsom Bikeway Master Plan map as having Class II bike lanes or Class III bike routes should be swept at least once a month.*
- Action: Street sweeping operators must ensure that bike lanes and shoulder areas of roadways are swept as part of routine street sweeping operations.*
- Action: As part of the permit process, all new construction projects should be required to pay for the sweeping of streets in the immediate vicinity of the project as needed to keep the streets free of debris.*
- Action: The City may consider adding a fee for all new construction projects to help cover the cost of sweeping City streets, under the assumption that a large part of the roadway gravel and debris is linked to trucks serving construction projects.*
- Action: Identify a reliable source of funding to cover all new Class I bike path construction. All proposed designs should be closely examined to minimize future maintenance costs.*

7.5.3 Security

Security may be an issue along portions of the proposed Class I bike paths. The following actions are recommended to address these concerns.

Action: Enforcement of applicable laws on the bike path will be performed by the City of Folsom Police Department, using both bicycles and vehicles. Enforcement of vehicle statutes relating to bicycle operation will be enforced on Class II and Class III bikeways as part of the department's normal operations. No additional staffing or equipment is anticipated for Class II or III segments.

Action: Recommended bike path hours of operation are from 1 hour before sunrise to 1 hour after sunset, unless otherwise specified. (Hours of operation should correlate with the applicable laws on trails under the enforcement of the Operating Parks jurisdiction).

8.0 Implementation Strategy

This section identifies costs for the proposed bicycle improvements, plus strategies on funding and financing.

8.1 Cost Breakdown

Costs are separated between bicycle facilities and programs. A complete breakdown of costs for bicycle projects is presented in Table 11A, and program costs are shown in Table 11B. The total cost over 20 years is estimated at \$9.8 million, with the Class I facilities representing 93% of the total costs. The costs include Class I bike paths that either are already funded or will be constructed by State Parks & Recreation, and future bike lanes and/or shoulder improvements that will be constructed as part of new roadway projects. Table 12 presents a more detailed breakdown of the funding sources by project over the next 20 years. Of the total project cost over 20 years, it is projected that the City will be responsible for about 13% of the costs. The average cost per year to the City would be about \$68,000. It is important to note that while many of the projects can be funded with federal, state, and regional transportation, safety, and/or air quality grants, others are recreational in nature and must be funded by local or private sources.

Short term improvements are recommended to be implemented over the next five years, or as funding is available. It also presents a 'best case' scenario for Folsom, providing a network of bicycle and pedestrian facilities and programs within the short term. Some of the more expensive projects may take longer to implement. It is important to note that many of the funding sources are highly competitive, and therefore impossible to determine exactly which projects will be funded by which funding sources. Timing of projects is also difficult to pinpoint exactly, due to dependence on competitive funding sources, timing of roadway and development projects, and the overall economy.

8.2 Funding

There are a variety of potential funding sources including local, state, regional, and federal funding programs that can be used to construct the proposed bicycle and pedestrian improvements. Many of the federal, state, and regional programs are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for bicycle projects typically comes from Transportation Development Act (TDA) funding, which is prorated to each community based on gasoline taxes. Funding for many of the programs would need to be funded either with TDA, general fund (staff time), or possibly private grants. Table 13 presents a summary of available funding along with timing, criteria, and funding agency. Note that as of this writing (November 1998) ISTEA has been re-authorized as TEA-21 and the exact impact on funding programs for bicycle projects is being analyzed.

Table 11A
Bicycle Project Cost Estimates

Segment	Year	Length (miles)	Type	Cost	
SHORT TERM (YEARS 1-5)					
1. Bikeway Enhancements					
Signal Detectors	1999-04	20	detectors	\$ 60,000	
Intersection/Interchange/Gap Closure	1999-04	10	striping/signs	\$ 100,000	
2. Blue Ravine-Humbug/Willow Creek					
Blue Ravine Bike Lanes	1998-04	0.37	II	\$ 9,250	
Humbug/Willow Creek	1998-04	8.4	I	\$ 4,552,800	
American River Bridge	1998-04	0	I	\$ 50,000	part of bridge project
Historic Truss Bicycle Bridge	1998-04	0	I	\$ 50,000	part of bridge project
4. East-West (PG&E) Trail					
Phase I	1998-04	1.7	I	\$ 425,000	
Phase II	2002-06	1.67	I	\$ 417,500	
5. East Lake Natoma Trail/Amer Bikeway	1998-04				
East Lake Natoma Trail (Phase II)	1998-04	2	I	\$ 550,000	Partially funded
American River Bikeway Access	1998-04	0	I	\$ 40,000	New crossing/access
Sub-Total				\$ 6,254,550	
MID - LONG TERM (YEARS 6-20)					
Baldwin Dam Trail		0.6	I	\$ 140,000	
Baldwin Reservoir Trail		0.4	I	\$ 92,500	
Cascade Falls Trail		1.0	I	\$ 250,000	
Folsom Lake Trail		0.4	I	\$ 92,500	DWR/State Parks
Folsom Prison Trail		1.0	I	\$ 250,000	State Prison
Folsom Rail Trail		3.0	I	\$ 757,500	
Foothill Rail Trail		4.6	I	\$ 1,160,000	
Leidesdorff St/Canal Path		0.5	I	\$ 112,500	
Upper Alder Creek Trail		0.5	I	\$ 132,500	
Willow Hill Res Trail		0.9	I	\$ 222,500	
Broadstone Pkwy		1.4	II	\$ 35,500	part of future roadway
Clarksville Rd		2.0	II	\$ 50,000	
Dean Street		0.8	II	\$ 18,750	
East Bidwell St		1.6	II	\$ 39,750	
Glenn Dr		0.7	II	\$ 16,500	
Golf Links Dr		1.4	II	\$ 35,000	part of future roadway
Iron Point Rd		1.8	II	\$ 44,500	part of future roadway
Natoma-East Natoma St		2.3	II	\$ 56,750	
Natoma Station Dr		0.4	II	\$ 8,750	
Oak Ave		0.8	II	\$ 18,750	
Randall Dr		0.8	II	\$ 20,750	
Riley St		0.5	II	\$ 11,250	
Russell Ranch Road		2.2	II	\$ 54,750	part of future roadway
Silberhorn Dr		0.6	II	\$ 15,500	
Turnpike Rd		0.4	II	\$ 9,250	
Willow Creek Dr		0.8	II	\$ 18,750	
Coloma St.		0.4	III	\$ 1,950	
Stafford St.		0.2	III	\$ 1,000	
Wales-School St.		1.0	III	\$ 5,000	
Sub-Total				\$ 3,672,450	
GRAND TOTAL				\$ 9,927,000	

Table 11B
Bicycle Program Cost Estimates

Folsom Bikeways Master Plan							
Program Costs	Unit Cost	Descr	Units	Cost	Notes		
Class I Maintenance	\$ 8,500.00	Mi/Year	28	\$ 238,000	See List		
Class II Maintenance	\$ 2,000.00	Mi/Year	50	\$ 100,000	Sweeping		
Bicycle Parking							
Class I Bike Lockers	\$ 350.00	EA/2 bikes	40	\$ 14,000	Public Locations		
Class II Bike Racks	\$ 150.00	EA/12 bikes	60	\$ 9,000	Public Locations		
Bicycle Corrals	\$ 450.00	EA/40 bikes	8	\$ 3,600	Schools		
Bicycle Education							
Safety Grants	\$ 5,000.00	Year	20	\$ 100,000	Safety programs taught in 3rd/4th Grade		
Safety Materials	\$ 2,000.00	Every 5 years	4	\$ 8,000	Updated safety materials		
School Commute Program	\$ 2,500.00	Year	20	\$ 50,000	Safety Coordinator		
Bicycle Lender/Repair Program	\$ 2,500.00	Year	20	\$ 50,000	Coordinator		
Bikeway Map	\$ 5,000.00	Every 5 years	4	\$ 20,000	5,000 color copies		
Community Adoption Program	\$ 2,500.00	Year	20	\$ 50,000	Coordinator		
Bike Fairs/Races	\$ 2,500.00	Year	20	\$ 50,000	Coordinator/Security		
Employer Incentives	\$ 2,500.00	Year	20	\$ 50,000	Coordinator		
Bike-to-Work Days	\$ 2,500.00	Year	20	\$ 50,000	Coordinator		
		20-Year Cost		\$ 792,600			
		Avrg. Cost/Year		\$ 39,630			

Table 12
Projects and Programs by Funding Source

		Local	Regional	State	Federal	Private/ Other	
SHORT TERM (YEARS 1-5)							
1. Bikeway Enhancements							
Signal Detectors		\$ 6,000	\$ 9,000	\$ 6,000	\$ 39,000		\$ 60,000
Intersection/Interchange		\$ 10,000	\$ 15,000	\$ 10,000	\$ 65,000		\$ 100,000
2. Blue Ravine-Humbug/Willow Creek							
Blue Ravine Bike Lanes		\$ 925	\$ 1,388	\$ 925	\$ 6,013		\$ 9,250
Humbug/Willow Creek		\$ 455,280	\$ 682,920	\$ 455,280	\$ 1,138,200	\$ 1,821,120	\$ 4,552,800
3. Bridges and Access							
American River Bridge		\$ 5,000	\$ 7,500	\$ 5,000	\$ 32,500		\$ 50,000
Historic Truss Bicycle Bridge		\$ 5,000	\$ 7,500	\$ 5,000	\$ 32,500		\$ 50,000
4. East-West (PG&E) Trail							
Phase I		\$ 42,500	\$ 63,750	\$ 42,500	\$ 276,250		\$ 425,000
Phase II		\$ 41,750	\$ 62,625	\$ 41,750	\$ 271,375		\$ 417,500
5. East Lake Natoma Trail/Amer Bikeway							
East Lake Natoma Trail		\$ 250,000	\$ -	\$ -	\$ -	\$250,000	\$ 550,000
American River Bikeway Access		\$ 4,000	\$ 6,000	\$ 4,000	\$ 26,000		\$ 40,000
Sub-Total		\$ 820,455	\$ 855,683	\$ 570,455	\$ 1,886,838		\$ 6,254,550
MID - LONG TERM (YEARS 6-20)							
Dean Street		\$ 1,875	\$ 2,813	\$ 1,875	\$ 12,188		\$ 18,750
Baldwin Dam Trail		\$ 14,000	\$ 21,000	\$ 14,000	\$ 91,000		\$ 140,000
Baldwin Reservoir Trail		\$ 9,250	\$ 13,875	\$ 9,250	\$ 60,125		\$ 92,500
Broadstone Pkwy		\$ 3,550	\$ 5,325	\$ 3,550	\$ 23,075		\$ 35,500
East Bidwell St		\$ 3,975	\$ 5,963	\$ 3,975	\$ 25,838		\$ 39,750
Folsom Lake Trail		\$ 9,250	\$ 13,875	\$ 9,250	\$ 60,125		\$ 92,500
Folsom Prison Trail		\$ 25,000	\$ 37,500	\$ 25,000	\$ 162,500		\$ 250,000
Folsom Rail Trail		\$ 75,750	\$ 113,625	\$ 75,750	\$ 492,375		\$ 757,500
Iron Point Rd		\$ 4,450	\$ 6,675	\$ 4,450	\$ 28,925		\$ 44,500
Turnpike Rd		\$ 925	\$ 1,388	\$ 925	\$ 6,013		\$ 9,250
Willow Creek Dr		\$ 1,875	\$ 2,813	\$ 1,875	\$ 12,188		\$ 18,750
Cascade Falls Trail		\$ 25,000	\$ 37,500	\$ 25,000	\$ 162,500		\$ 250,000
Clarksville Rd		\$ 5,000	\$ 7,500	\$ 5,000	\$ 32,500		\$ 50,000
Coloma St.		\$ 195	\$ 293	\$ 195	\$ 1,268		\$ 1,950
Foothill Rail Trail		\$ 116,000	\$ 174,000	\$ 116,000	\$ 754,000		\$ 1,160,000
Glenn Dr		\$ 1,650	\$ 2,475	\$ 1,650	\$ 10,725		\$ 16,500
Golf Links Dr		\$ 3,500	\$ 5,250	\$ 3,500	\$ 22,750		\$ 35,000
Leidesdorff St/Canal Path		\$ 11,250	\$ 16,875	\$ 11,250	\$ 73,125		\$ 112,500
Natoma-East Natoma St		\$ 5,675	\$ 8,513	\$ 5,675	\$ 36,888		\$ 56,750
Natoma Station Dr		\$ 875	\$ 1,313	\$ 875	\$ 5,688		\$ 8,750
Oak Ave		\$ 1,875	\$ 2,813	\$ 1,875	\$ 12,188		\$ 18,750
Randall Dr		\$ 2,075	\$ 3,113	\$ 2,075	\$ 13,488		\$ 20,750
Riley St		\$ 1,125	\$ 1,688	\$ 1,125	\$ 7,313		\$ 11,250
Russell Ranch Road		\$ 5,475	\$ 8,213	\$ 5,475	\$ 35,588		\$ 54,750
Stafford Street		\$ 100	\$ 150	\$ 100	\$ 650		\$ 1,000
Silberhorn Dr		\$ 1,550	\$ 2,325	\$ 1,550	\$ 10,075		\$ 15,500
Upper Alder Creek Trail		\$ 13,250	\$ 19,875	\$ 13,250	\$ 86,125		\$ 132,500
Wales-School St		\$ 500	\$ 750	\$ 500	\$ 3,250		\$ 5,000
Willow Hill Res Trail		\$ 22,250	\$ 33,375	\$ 22,250	\$ 144,625		\$ 222,500
Sub-Total		\$ 351,370	\$ 527,055	\$ 351,370	\$ 2,283,905		\$ 3,513,700
PROGRAMS							
Class I Maintenance		\$ 154,700	\$ -	\$ 83,300	\$ -		\$ 238,000
Class II Maintenance		\$ 70,000	\$ -	\$ -	\$ -	\$ 30,000	\$ 100,000
Bicycle Parking							
Class I Bike Lockers		\$ 9,800	\$ -	\$ -	\$ -	\$ 4,200	\$ 14,000
Class II Bike Racks		\$ 6,300	\$ -	\$ -	\$ -	\$ 2,700	\$ 9,000
Bicycle Corrals		\$ 2,520	\$ -	\$ -	\$ -	\$ 1,080	\$ 3,600
Bicycle Education							
Safety Grants		\$ 20,000	\$ -	\$ 50,000	\$ -	\$ 30,000	\$ 100,000
Safety Materials		\$ 1,600	\$ -	\$ 4,000	\$ -	\$ 2,400	\$ 8,000
School Commute Program		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Bicycle Lender/Repair Program		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Bikeway Map		\$ 5,000	\$ 5,000	\$ 5,000	\$ -	\$ 5,000	\$ 20,000
Community Adoption Program		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Bike Fairs/Races		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Employer Incentives		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Bike-to-Work Days		\$ 12,500	\$ 12,500	\$ 12,500	\$ -	\$ 12,500	\$ 50,000
Sub-Total		\$ 344,920	\$ 80,000	\$ 217,300	\$ -	\$ 150,380	\$ 792,600
TOTAL		\$ 1,516,745	\$ 1,462,738	\$ 1,139,125	\$ 4,170,743	\$ 150,380	\$ 10,560,850
Per Year Average		75,837.25	73,136.88	56,956.25	208,537.13	7,519.00	528,042.50

TEA-21

TEA-21 was adopted by both houses of Congress on May 22, 1998. Much of the delay in adopting the new transportation legislation was the result of conflicts between donor and recipient states (states that received more or less money than they paid in gas taxes) under the old transfer arrangements. The new formulas will rectify the past imbalances, allowing large donor states with higher amounts that can be transferred between various funding programs. The follow-up to ISTEA, TEA-21 offers some important changes in funding opportunities.

1. The Surface Transportation Program (STP) was amended as follows:
 - Approximately \$33 billion available nationwide.
 - Bicycle and pedestrian projects remain eligible.
 - Sidewalk improvements to comply with the Americans with Disabilities Act (ADA) are now eligible for Surface Transportation Program funds.
2. The National Highway System (NHS) program was amended as follows:
 - Pedestrian projects may now be funded with NHS funds.
 - NHS funds may now be used on bicycle and pedestrian projects within Interstate corridors.
3. The Transportation Enhancements (TE) program was amended as follows:
 - \$3.3 billion available nationwide
 - Bicycle and pedestrian safety and education programs
 - Tourist and welcome centers
 - Environmental mitigation to provide wildlife corridors
 - Requirement that each project be directly related to a surface *transportation* project
 - Eighty (80) percent Federal matching requirement applies only to total non-Federal share rather than total project cost.
 - Twenty-five (25) percent of the TE funds received over the amount received in FY 1997 may be transferred to other STP activities.
 - Eight (8) specific projects are funded off the top of the TE program, none in the Western United States.
4. The Congestion Mitigation and Air Quality Improvements (CMAQ) program was amended as follows:
 - \$8.12 billion available nationwide
 - Bicycle project eligibility remains essentially the same

- A small percentage can be transferred to other programs
5. The Recreational Trails Program was amended as follows:
- \$270 million available nationwide over the next six years
 - Bicycle project eligibility remains essentially the same
6. The Hazard Elimination Program was amended as follows:
- Now can be used for bicycling and walking hazards
 - Definition of a 'public road' now expended to include bikeways, pathways, and traffic calming measures.
7. A new category, Transit Enhancements Program, was created that calls for transit agencies in urbanized areas over 200,000 population to use 1 percent of their Urban Formula Funds for Transit Enhancements Activities. Up to \$50 million per year may be available for pedestrian access, walkways, bicycle access, bike storage facilities, and bike-on-bus racks. The program calls for 95% Federal/5% local match.
8. Scenic Byway, bridge repair, transit, safety (non-construction), and Federal Lands programs all remain essentially the same under TEA-21, with the amounts either the same or increasing from ISTEA.
9. Planning provisions for states and MPO's have been streamlined, with bicycle and pedestrian needs to be given due consideration in the development of comprehensive transportation plans. Specific policies include directives to not approve any project or regulatory action that will have an adverse impact on non-motorized safety, unless a reasonable alternative route is provided or already exists.
10. When state or local regulations permit, allow use of bicycle facilities by electric bicycles and motorized wheelchairs.
11. Railway-highway crossings should consider bicycle safety.
12. A new Surface Transportation-Environment Cooperative Research Program is established for funding non-motorized research.
13. In cooperation with AASHTO, ITE, and other groups, establish new bicycle design guidelines within 18 months.

A detailed program-by-program of available funding programs along with the latest relevant information is provided on the following pages. Specific amounts and deadlines are not available yet for many of the TEA-21 programs. Once Folsom's bicycle projects and costs are identified, each project will be targeted for specific funding sources where it can be expected to compete effectively.

Federal funding through the TEA-21 (Transportation Enhancements Act) program will provide the bulk of outside funding. TEA-21 currently contains three major programs, STP (Surface Transportation Program), TEA (Transportation Enhancement Activities), and CMAQ (Congestion Mitigation and Air Quality Improvement) along with other programs such as the National Recreational Trails Fund, Section 402(Safety) funds, Scenic Byways funds, and Federal Lands Highway funds.

Funding Program	Funding Source/Availability	Fund Type (Construction, Non-construction, both)	Notes
Federal Funding			
STP	Both	Transportation	Both
Transportation Enhancement Activities (TEA-21)	Both	Construction	Construction
CMAQ	Both	Transportation	Both
National Highway System (NHS)	Both	Transportation	Both
Federal Lands Highway Funds	Both	Transportation	Construction
Scenic Byways Program	Both	Both	Construction, planning, research, and development
Tough Road and Interchange	Both	Transportation	Construction
National Recreational Trails Fund	Both	Both	Both
Regional Safety Program	Both	Transportation	Both
Transportation Safety and Development	Both	Transportation	Both
Section 402 and Public Purpose Act	Both	Both (Primarily Transportation)	Both

Table 13: Summary of Funding Programs

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project types (Construction, Non-construction, both)
Federal Funding			
STP	Both	Transportation	Both
Transportation Enhancement Activities (ISTEA)	Both	Transportation	Construction
CMAQ	Both	Transportation	Both
National Highway System (NHS)	Both	Transportation	Both
Federal Lands Highway Funds	Both	Transportation	Construction
Scenic Byways Program	Both	Both	Construction (including planning design and development)
Bridge Repair and Replacement	Bicycle	Transportation	Construction
National Recreation Trails Fund	Both	Both	Both
Highway Safety Program	Both	Transportation	Non-construction
Highway Safety and Development	Pedestrian	Transportation	Non-construction
Recreational and Public Purposes Act	Both	Both (Primarily Recreational)	Both

Table 13 (cont.'d): Summary of Funding Programs

Funding Programs	Modes (Bicycle, pedestrian-walkways, trails)	Trip Types (Commute/Transportation, Recreational)	Project types (Construction, Non-construction, both)
Schools and Roads Grants to States	Both	Transportation	Construction
Section 3 Mass Transit Capital Grants	Both	Transportation	Both
Section 3 Mass Transit Capital Grants	Bicycle	Transportation	Construction
State Funding			
California Bikeways Act	Bicycle	Transportation	Construction
Environmental Enhancement and Mitigation program	Both	Transportation	Construction
Flexible Congestion Relief	Both	Transportation	Construction
Habitat conservation Fund Grant Program	Both	Both	Construction
Kapiloff Land Bank Funds	Both	Transportation	Construction (Land acquisition)
Land and Water conservation Fund	Both	Both	Construction (Including land acquisition)
Mello-Roos Community Facilities Districts	Both	Both	Both
Local Transportation Fund (LTF) TDA Article 3	Both	Transportation	Both

TEA-21 funding is administered through the state (Caltrans or Resources Agency) and regional governments (Sacramento Area Council of Government). Most, but not all, of the funding programs are transportation versus recreational oriented, with an emphasis on (a) reducing auto trips and (b) providing an inter-modal connection. Funding criteria often includes completion and adoption of a bicycle master plan, quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, CEQA compliance, and commitment of some local resources. In most cases, TEA-21 provides matching grants of 80 to 90 percent--but prefers to leverage other moneys at a lower rate.

With an active and effective regional agency such as the SACOG, Folsom should be in a good position to secure more than its fair share of TEA-21 funding. It will be critical to get the local state assemblyman and senator briefed on these projects and lobbying Caltrans and the California Transportation Commission for these projects.

State

TDA Article III (SB 821)

Transportation Development Act (TDA) Article III funds are state block grants awarded annually to local jurisdictions for bicycle and pedestrian projects in California. These funds originate from the state gasoline tax and are distributed to local jurisdictions based on population.

AB 434

AB 434 funds are available for clean air transportation projects, including bicycle projects, in California.

Bicycle Lane Account

The state Bicycle Lane Account (BLA) is an annual program that is available for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects which benefit bicycling for commuting purposes. While the fund is currently small (\$700,000 available annually), it has been increased to \$1 million/yr. starting in FY 1999 with an increase to \$3 million/year by the state assembly and senate.

Regional

The Air Quality Management District is a major potential source of funding for bicycle and pedestrian programs. The grants are generally in the \$50,000 to \$200,000 range and are highly competitive based on a cost-benefit formula developed by the District. Funding priorities also change annually with the District, between bicycle and other projects such as transit and electric bicycle/vehicle uses.

Local

New Construction

Future road widening and construction projects are one means of providing bike lanes. To ensure that roadway construction projects provide bike lanes where needed, it is important that an effective review process is in place to ensure that new roads meet the standards and guidelines presented in this master plan.

Impact Fees

Another potential local source of funding are developer impact fees, typically ties to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site bikeway improvements which will encourage residents to bicycle rather than drive. In-lieu parking fees may be used to help construct new or improved bicycle parking. Establishing a clear nexus or connection between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

Mello Roos

Bike paths, lanes, and pedestrian facilities can be funded as part of a local assessment or benefit district. Defining the boundaries of the benefit district may be difficult unless the facility is part of a larger parks and recreation or public infrastructure program with broad community benefits and support.

Other

Local sales taxes, fees, and permits may be implemented, requiring a local election. Volunteer programs may substantially reduce the cost of implementing some of the proposed pathways. Use of groups such as the California Conservation Corp (who offer low cost assistance) will be effective at reducing project costs. Local schools or community groups may use the bikeway or pedestrian project as a project for the year, possibly working with a local designer or engineer. Work parties may be formed to help clear the right of way where needed. A local construction company may donate or discount services. A challenge grant program with local businesses may be a good source of local funding, where corporations 'adopt' a bikeway and help construct and maintain the facility.

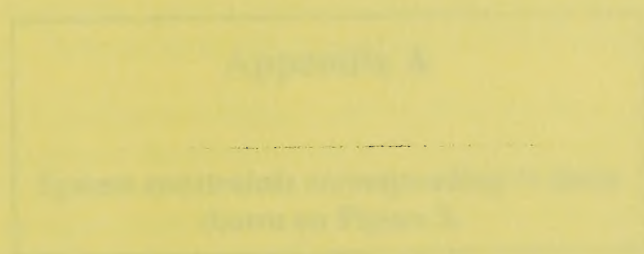
Other opportunities for implementation will appear over time which may be used to implement the system.

8.3 Financing

Proposed improvements and programs to be developed over the next 20 years in Folsom have been analyzed to determine the annual financing requirements, and to allow the City to budget its resources and target funding applications. It is important to note that the majority of funding for bicycle projects is expected to be derived from federal sources, TEA-21. These funding sources are extremely competitive, and require a combination of sound applications, local support, and lobbying on the regional and state level.

The City of Folsom has historically invested approximately \$90,000 annually in bicycle facilities, in the form of bike lane and bike path construction and maintenance. Often these items are included in larger construction and maintenance projects, and specific line item accounts are not kept. Therefore, the annual expenditure figure is an estimate based on the City's Public Works Department review.

Corridor name	EXISTING			PROPOSED		
	Off-Street	On-Street	Total	Off-Street	On-Street	Total
Alder Creek Trail		2.2	2.2			
American River Canyon Dr		3.6	3.6			-
American River Bikeway	6.5		6.5			-
Baldwin Dam Trail	0.8		0.8	0.6		0.6
Baldwin Reservoir Trail			-	0.4		0.4
Blue Ravine Rd-Green Valley Rd		5.1	5.1		0.4	0.4
Briggs Ranch Rd		1.2	1.2			-
Broadstone Pkwy			-		1.4	1.4
Cascade Falls Trail			-	1.0		1.0
City Park Trail	0.5					-
Clarksville Rd			-		2.0	2.0
Coloma St.			-		0.4	0.4
Creekside Dr		0.8	0.8			-
East Bidwell St		2.0	2.0		1.6	1.6
East-West Trail			-	3.4		3.4
Folsom Blvd.		2.4	2.4			-
Folsom Lake Trail			-	0.4		0.4
Folsom Prison Trail			-	1.0		1.0
Folsom Rail Trail			-	3.0		3.0
Folsom-Auburn Rd		2.2	2.2			-
Foothill Rail Trail			-	4.6		4.6
Glenn Dr		0.9	0.9		0.7	0.7
Gold Hill Trail	1.4		1.4			-
Golf Links Dr			-		1.4	1.4
Greenback Lane		1.2	1.2			-
Grover Rd		0.4	0.4			-
Humbug Creek Trail	1.0		1.0	3.1		3.1
Ingersoll Way		0.2	0.2			-
Iron Point Rd		4.8	4.8		1.8	1.8
East Lake Natoma Trail	2.0		2.0	2.0		2.0
Leidesdorff St/Canal Path	0.4		0.4	0.5		0.5
Madison Ave		0.3	0.3			-
Manseau Dr		0.3	0.3			-
Natoma-East Natoma St		2.9	2.9		2.3	2.3
Natoma Trail	0.8		0.8			-
Natoma Station Dr		0.6	0.6		0.4	0.4
North Lexington Dr		0.8	0.8			-
Oak Ave			-		0.8	0.8
Oak Avenue Pkwy-East		2.4	2.4			-
Oak Avenue Pkwy-West		1.1	1.1			-
Prewitt Dr.		0.5	0.5			-
American River Bridge			-		0.4	0.4
Randall Dr			-		0.8	0.8
Riley St		1.9	1.9		0.5	0.5
Russell Ranch Road			-		2.2	2.2
Russi Rd		1.0	1.0			-
Sibley St-Prarie City Rd		1.2	1.2			-
Silberhorn Dr		1.1	1.1		0.6	0.6
South Lexington Dr		0.8	0.8			-
Sutter St		0.3	0.3			-
Turnpike Rd		0.9	0.9		0.4	0.4
Upper Alder Creek Trail	0.3		0.3	0.5		0.5
Wales-School St			-		1.0	1.0
Willow Creek Dr		0.8	0.8		0.8	0.8
Willow Creek Trail	0.6		0.6	5.3		5.3
Willow Hill Res Trail			-	0.9		0.9
Total	14.1	43.6	57.3	26.6	19.6	46.2



Appendix

The following is list of major constraints corresponding both existing and future highways. The constraints are grouped in three classes in Figure 2.

1. Deer Road is closed to pedestrian and equestrian. This road is under the jurisdiction of the Bureau of Reclamation and therefore its use is prohibited.
2. Access to American River Lake Trail across Lake and Forest Road in the western sector across Deer Creek Drive is difficult, and not a signposted crossing. People are forced to cross at Forest Road and ride on the road against one-way traffic to connect with well known Deer Creek Drive. Acquiring a well maintained access that bypassed road through this problem.
3. Trail across Deer Creek Road along Lake Forest up to Highway 200 is a challenge due to steep slopes. Also need to get horses through road safely.
4. Riley Street between Highway 200 and Lake Forest Road is a major corridor of traffic. It is necessary to upgrade to a Class II or Class III bike facility.
5. Riley Street between Highway 200 and Lake Forest Road is a major corridor of traffic. It is necessary to upgrade to a Class II or Class III bike facility.
6. East Point Road between Colusa and Sacramento River is a major corridor of traffic. It is necessary to upgrade to a Class II or Class III bike facility.
7. Chase Drive, between Highway 200 and Riley Street, is striped with a white line but is subdivided with a width of only 1-1.5 feet. Chase Drive system makes it very difficult to ride the bike through the area.
8. Crossing at Highway 200 at the existing Willow Creek trail is a major barrier. Neither a trail nor a crossing is recommended at this location.
9. Highway Section Drive between Douglas and New River Road is a major corridor of traffic. It is necessary to upgrade to a Class II or Class III bike facility. This section of road generates a lot of traffic in the Class II system. A bike lane currently exists on Highway Section Drive and ends at Douglas Drive forcing people to use the side walk.
10. Iron Point Road creates a barrier for the Willow Creek trail. Iron Point Road is a two-lane road and a trail crossing will be very difficult and expensive.
11. Iron Point Road creates a barrier for the Alder Creek trail. Iron Point Road is a two-lane road and a trail crossing will be very difficult and expensive.

Appendix A

System constraints corresponding to those shown on Figure 2.

The following is list of major constraints confronting both existing and future bikeways. The numbers correspond to those shown on Figure ---.

1. Dam Road is closed to pedestrians and bicyclists. This road is under the jurisdiction of the Bureau of Reclamation and bicycle access is prohibited.
2. Access to American River Bike Trail across Folsom/Auburn Road at the current point across from Berry Creek Drive is difficult without a signalized crossing. People are forced to cross at Inwood Road and ride on the street against on-coming traffic to connect with trail across from Berry Creek Drive. Acquiring a trail easement across from Inwood would eliminate this problem.
3. Trail access from channel trail along Lake Natoma up to Natoma Street is a challenge due to steep terrain. Also need to get easements through state prison property.
4. Riley Street between Natoma Street and Liedesdorff Street, in historic section of Folsom, is too narrow to accommodate a Class II or Class III bike facility.
5. Sibley Street between Natoma Street and Blue Ravine is narrow and has little or no shoulders. This section of Sibley has potential of attracting many cyclists.
6. East Bidwell Street between Coloma and Woodsmoke Way is a major arterial street, which carries a significant amount of automobile traffic and has no bicycle facilities. This forces cyclists to interface with traffic and creates a significant gap in the cross-town on-street bikeway system. Current cross section in this section of East Bidwell Street has two traffic lanes in each direction with a median and no shoulders.
7. Glenn Drive, between Sibley Street and Riley Street, is striped with a bike lane but is substandard with a width of only 1-1.5 feet. Current cross section makes it very difficult to widen bike lane through this area.
8. Crossing of Folsom Blvd. at the Humbug-Willow Creek trail is a major barrier. Neither a trail undercrossing or overcrossing is feasible at this location.
9. Natoma Station Drive, between Turnpike and Blue Ravine Road is too narrow to accommodate the existing 4 lanes of traffic and a bike lane. This section of road presents a gap in the Class II system. A bike lane currently exists on Natoma Station Drive and ends at Turnpike Drive forcing people to use the side walk.
10. Iron Point Road creates a barrier for the Willow Hills reservoir trail. Iron Point Road is a six-lane arterial and a trail crossing will be very difficult and expensive.
11. Iron Point Road creates a barrier for the Alder Creek trail. Iron Point Road is a six-lane arterial and a trail crossing will be very difficult and expensive.

12. Highway 50 creates barrier to the Alder Creek trail. Future trail along Alder Creek would continue along both sides of Highway 50.
13. Iron Point Road creates a barrier for the Gold Hill trail. Iron Point Road is a six-lane arterial and a trail crossing will be very difficult and expensive.
14. Riley Street, between Cruickshank Drive and Oak Avenue, has substandard bike lanes (1-foot width) and the ability to widen bike lanes is limited due to restricted right-of-way. This is potentially a high volume bikeway corridor.
15. Newly constructed Highway 50/Prairie City Road interchange created a barrier to cyclists crossing Hwy 50 along Prairie City Road. The design of the high-speed on- and off-road ramps make it difficult for cyclists to safely cross Highway 50.
16. Future construction of Highway 50/East Bidwell interchange is proposed to have high-speed on- and off-ramps, similar to Prairie City Road, creating an unfriendly on street bike crossing of Highway 50.
17. Crossing of Greenvalley Road at the Humbug-Willow Creek Trail is a major barrier. A trail undercrossing or overcrossing is not feasible at this site. A separate bicycle/pedestrian signal is also not feasible.
18. Baldwin Dam Road is very narrow and has no shoulders. Limited right-of-way limits the widening of roadway. Bike trail along this corridor is substandard in both width and slope. The limited right-of-way eliminates the opportunity to widen the trail.
19. East Natoma Street, between Stanford St and Fargo Way, has no Class II bike lanes. However, East Natoma Street on both ends has bike lanes. This is the only segment along East Natoma Street that doesn't have a Class II bike lane.

- 3.3.3.10 Change of Approved Vehicular Use Area. Whenever zoning approval for a use has been granted and a parking plan for the use has been approved, zoning approval for a subsequent use on the property is conditioned upon the continued compliance with the parking provisions contained in the approved parking plan. Any change of the vehicular use area as shown on the approved parking plan must comply with the requirements of this Division.
- 3.3.3.11 New Uses Replacing Existing Uses. Whenever the use of an existing development is changed to a different use which requires more parking spaces under this Division than were required for the prior use, additional parking spaces shall be provided for the new use as follows.
- A. The number of additional parking spaces required is determined by subtracting the number of spaces required for the prior approved use from the number of spaces required for the new use.
 - B. If parking for the new use can be accommodated within the vehicular use area approved for the prior use, parking for the new use shall comply with the regulations in effect at the time of approval of the most recent parking plan for the prior use. However, if the prior use was approved before April 1, 1969, and there is no approved parking plan for the use on file with the City, parking for the new use shall comply with:
 - 1. The parking, screening, and landscaping requirements in effect at the time the development permit for the prior use was approved; and
 - 2. The paving and striping requirements of this Division.
 - C. If parking for the new use cannot be accommodated within the existing vehicular use area approved for the prior use, parking must be provided in accordance with the requirements in Sec. 3.3.3.12.
- 3.3.3.12 Expansions. Any expansion of an existing use or any addition of a new use to an existing development which results in an expansion in lot area, floor area, vehicular use area, number of dwelling units, or number of seats is subject to the following.
- A. If an expansion is less than twenty-five (25) percent or if a series of expansions cumulatively results in less than a twenty-five (25) percent expansion in land area, floor area, lot coverage, or vehicular use area, the requirements of this Division apply only to the proposed expansion. Existing development on the site is subject to the zoning regulations in effect at the time of approval of the most recent parking plan for the existing development. However, if the existing development was approved prior to April 1, 1969, and there is no approved parking plan on file with the City, the vehicular use area for the existing development shall comply with:
 - 1. The parking, screening, and landscaping requirements in effect at the time the development permit for the existing use was approved; and
 - 2. The paving and striping requirements of this Division.
 - B. If an expansion is twenty-five (25) percent or greater or if a series of expansions cumulatively results in a twenty-five (25) percent or greater expansion in land area, floor area, lot coverage, or vehicular use area, the requirements of this Division apply to the entire site.
 - C. If the reason for an expansion is to bring the number of spaces associated with an existing use into conformance with the minimum number of spaces required by the Code for that use, the expansion area is not counted when calculating the percent of expansion.

LAND USE GROUP/CLASS

**OFF-STREET PARKING AND BICYCLE
FACILITIES REQUIRED**

Zoo

Motor Vehicle: SA. Parking area equal to thirty (30) percent of the area occupied by the zoo.

Bicycle: Twenty (20) percent - all Class 2.

Educational Use

Preschool

Motor Vehicle: SB. One (1) space per two hundred (200) sq. ft. GFA.

Bicycle: Four (4) percent - all Class 2.

Elementary and Secondary Schools

Grades K - 8

Motor Vehicle: SA. One (1) space per ten (10) students plus one (1) space per two hundred fifty (250) sq. ft. of floor area in office use. Drop-off area: Two (2) lanes, minimum four (4) parallel stalls on inside lane.

Bicycle: One (1) space per ten (10) students and employees - all Class 2.

Grades 9 - 12

Motor Vehicle: SA. One (1) space per five (5) students.

Bicycle: One (1) space per ten (10) students and employees - all Class 2. The maximum number of bicycle parking spaces required is one hundred (100).

*Postsecondary Institutions;
Instructional Schools*

Motor Vehicle: SA. One (1) space per two hundred (200) sq. ft. GFA or one (1) space per two hundred fifty (250) sq. ft. of office area plus one (1) space per one hundred (100) sq. ft. of classroom area, whichever is greater.

Bicycle: Eight (8) percent - ten (10) percent Class 1 and ninety (90) percent Class 2.

Membership Organization

Motor Vehicle: SB. One (1) space per five (5) fixed seats in all combined public assembly areas plus one (1) space per fifty (50) sq. ft. of floor area without fixed seats in all combined public assembly areas.

Bicycle: Eight (8) percent - ten (10) percent Class 1 and ninety (90) percent Class 2.

Religious Use

Motor Vehicle: SB. One (1) space per five (5) fixed seats or one (1) space per fifty (50) sq. ft. of floor area of all combined areas of assembly where religious services are held.

Bicycle: Eight (8) percent - ten (10) percent Class 1 and ninety (90) percent Class 2.

DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

SECTIONS:

3.3.1	PURPOSE
3.3.2	APPLICABILITY
3.3.3	GENERAL PROVISIONS
3.3.4	REQUIRED NUMBER OF MOTOR VEHICLE AND BICYCLE PARKING SPACES
3.3.5	MIXED USE PARKING REQUIREMENTS
3.3.6	EXCEPTIONS
3.3.7	DESIGN CRITERIA
3.3.8	REDUCTIONS IN REQUIRED NUMBER OF MOTOR VEHICLE PARKING SPACES

3.3.1 PURPOSE. This Division establishes minimum requirements for motor vehicle and bicycle parking to ensure that such facilities are consistent with the objectives of the General Plan. As part of a balanced transportation system, these regulations are intended to promote public safety and environmental quality. Specifically, these regulations are intended to:

- Ensure sufficient off-street motor vehicle and bicycle parking facilities by establishing minimum parking requirements for land uses.
- Reduce excessive off-street parking by encouraging the shared use of vehicular use areas and the use of public transit.
- Promote pedestrian safety by separating vehicular use areas from pedestrian areas.
- Encourage safe, convenient, and efficient design of motor vehicle and bicycle parking spaces, circulation, and access areas.
- Improve air quality by requiring paving of vehicular use areas.

3.3.2 APPLICABILITY. The provisions of this Division apply to:

3.3.2.1 New development.

3.3.2.2 New uses locating in an existing development, as required in Sec. 3.3.3.11.

3.3.2.3 Any expansion of an existing use or any addition of a new use to an existing development, as required in Sec. 3.3.3.12.

3.3.3 GENERAL PROVISIONS.

3.3.3.1 Land Use Groups and Classes. The specific Land Use Groups and Classes listed in Sec. 3.3.4 are defined in Article VI.

3.3.3.2 Parking Required for Uses Not Listed. Required parking for uses not listed in this Division shall be determined by the Zoning Administrator based on similarity to a listed use.

3.3.3.3 Multiple Principal Uses. Where there are multiple principal uses in a development and the provisions of Sec. 3.3.5, Mixed Use Parking Requirements, do not apply, the sum of the number of parking spaces required for the individual uses applies.

ARTICLE III. DEVELOPMENT REGULATIONS
DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

LAND USE GROUP/CLASS**OFF-STREET PARKING AND BICYCLE FACILITIES REQUIRED****Billboard**

Motor Vehicle: None (0) required.
Bicycle: None (0) required.

Day Care

Motor Vehicle: SB. One (1) space per two hundred (200) sq. ft. GFA.
Bicycle: Four (4) percent - all Class 2.

Day Care/Home Occupation

Motor Vehicle: SB. Two (2) spaces for five (5) to ten (10) clients in addition to those required for the residential use.
Bicycle: None (0) required.

Entertainment

Motor Vehicle: SB. One (1) space per fifty (50) sq. ft. GFA.
Bicycle: Eight (8) percent - all Class 2.

Dance Hall

Motor Vehicle: SB. One (1) space per fifty (50) sq. ft. GFA.
Bicycle: Four (4) percent - fifty (50) percent Class 1 and fifty (50) percent Class 2.

Carnival/Circus

Motor Vehicle: SA. Parking area equal to or greater than the area occupied by the carnival or circus.
Bicycle: None (0) required for temporary shows not exceeding fifteen (15) days; twenty (20) percent - all Class 2 for permanent enterprises.

Rodeo Arena

Motor Vehicle: SA. One (1) space per five (5) fixed seats or one (1) space per one thousand (1,000) sq. ft. of lot area minus the main arena area, whichever is greater.
Bicycle: None (0) required.

Sports Stadium or Center

Motor Vehicle: SA. One (1) space per five (5) fixed seats or one (1) space per fifty (50) sq. ft. GFA without fixed seats.
Bicycle: Eight (8) percent, with a maximum requirement of one hundred fifty (150) spaces - ten (10) percent Class 1 and ninety (90) percent Class 2.

Theater - Live

Motor Vehicle: SB. One (1) space per five (5) fixed seats or one (1) space per fifty (50) sq. ft. GFA without fixed seats.
Bicycle: Fifteen (15) percent - ten (10) percent Class 1 and ninety (90) percent Class 2.

Theater - Movie

Motor Vehicle: SB. One (1) space per four (4) fixed seats or one (1) space per forty (40) sq. ft. GFA without fixed seats.
Bicycle: Fifteen (15) percent - ten (10) percent Class 1 and ninety (90) percent Class 2.

Sec. 3.3.4

CITY OF TUCSON LAND USE CODE
ARTICLE III. DEVELOPMENT REGULATIONS
DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

LAND USE GROUP/CLASS

**OFF-STREET PARKING AND BICYCLE
FACILITIES REQUIRED**

Transportation Service, Land Carrier

Motor Vehicle: SA. One (1) space per two hundred (200) sq. ft. GFA of office area.

Bicycle: None (0) required.

Travelers' Accommodation, Campsite

Motor Vehicle: SB. One (1) space per campsite to be located at or in close proximity to the campsite plus one space per three hundred (300) sq. ft. GFA to be grouped together in close proximity to common use facilities.

Bicycle: Two (2) percent - all Class 2.

Travelers' Accommodation, Lodging

Motor Vehicle: SB. One (1) space per rental unit.

Bicycle: Eight (8) percent - seventy-five (75) percent Class 1 and twenty-five (25) percent Class 2.

INDUSTRIAL USE GROUP

Craftwork

Extraction

General Manufacturing

Hazardous Material Manufacturing

Heavy Equipment Manufacturing

Motion Picture Industry

Perishable Goods Manufacturing

Precision Manufacturing

Primary Manufacturing

Processing and Cleaning

Refining

Motor Vehicle: SA. One (1) space per five hundred (500) sq. ft. GFA.

Bicycle: Eight (8) percent - ninety (90) percent Class 1 and ten (10) percent Class 2.

Salvaging

Motor Vehicle: SA. One (1) space per five thousand (5,000) sq. ft. of lot area plus one (1) space per two hundred fifty (250) sq. ft. of sales and office area.

Bicycle: None (0) required.

RECREATION USE GROUP

Golf Course

Motor Vehicle: SB. One (1) space per fifty (50) sq. ft. GFA.

Bicycle: Fifteen (15) percent - all Class 2.

Motor Vehicle: SB. Thirty-six (36) spaces per nine (9) holes.

Bicycle: None (0) required.

Driving Range

Motor Vehicle: SB. One (1) space per fixed tee.

Bicycle: Two (2) percent - all Class 2.

Neighborhood Recreation; Recreation

Motor Vehicle: SB. One (1) space per fifty (50) sq. ft. GFA.

Bicycle: Fifteen (15) percent - all Class 2.

Arcade/Game Room

Motor Vehicle: SB. One (1) space per seventy-five (75) sq. ft. GFA.

Bicycle: Fifteen (15) percent - all Class 2.

ARTICLE III. DEVELOPMENT REGULATIONS
DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

LAND USE GROUP/CLASS**OFF-STREET PARKING AND BICYCLE FACILITIES REQUIRED****RESIDENTIAL USE GROUP****Family Dwelling; Mobile Home Dwelling*****Single-Family and Mobile Home Dwellings******Multifamily Dwellings
0-70 units/acre******Multifamily Dwellings
Over 70 units/acre******Projects of any density for the
elderly or the physically disabled*****Group Dwelling*****Dormitory, Fraternity, or Sorority*****Residential Care Services*****1 - 5 Residents******6 - 10 Residents******11 - 15 Residents******16 - 20 Residents******21 or more Residents***

Bicycle: Eight (8) percent for multifamily projects of four (4) or more units - fifty (50) percent Class 1 and fifty (50) percent Class 2.

Motor Vehicle: SB. The number of parking spaces required is based on the following:

Two (2) spaces per dwelling unit plus visitor parking required at a ratio of one-fourth (0.25) space per unit, unless on-street parking is available on both sides of the street on which the lot fronts.

The number of spaces per dwelling unit is based on the number of bedrooms in each unit as follows:

Studio, 1.55 spaces per dwelling unit
 One Bedroom, or
 Two Bedrooms

Three Bedrooms 1.75 spaces per dwelling unit

Four or More Bedrooms 2.00 spaces per dwelling unit

1.25 spaces per dwelling unit

0.75 space per dwelling unit

Motor Vehicle: SB. One-half (0.5) space per resident plus two (2) spaces for the resident family.

Bicycle: One-half (0.5) space per resident - seventy-five (75) percent Class 1 and twenty-five (25) percent Class 2.

Motor Vehicle: SB. Seven-tenths (0.7) space per resident.

Bicycle: One (1) space per resident - seventy-five (75) percent Class 1 and twenty-five (25) percent Class 2.

Motor Vehicle: SB.

Three (3) spaces.

Four (4) spaces.

Five (5) spaces.

Six (6) spaces.

One (1) space per two (2) beds.

Bicycle: Four (4) percent - all Class 2.

LAND USE GROUP/CLASS

**OFF-STREET PARKING AND BICYCLE
FACILITIES REQUIRED**

UTILITIES USE GROUP

Distribution System
Generating System
Sanitation System

Motor Vehicle: SA. One (1) space per five hundred (500) sq. ft. GFA, with a minimum of two (2) spaces per facility.
Bicycle: None (0) required.

WHOLESALE USE GROUP

Business Supply and Equipment
Wholesaling
Construction/Heavy Equipment
Wholesaling
Food and Beverage Wholesaling
Hazardous Material Wholesaling

Motor Vehicle: SA. One (1) space per two thousand (2,000) sq. ft. of storage area for the first twenty thousand (20,000) sq. ft. of storage area plus one (1) space per ten thousand (10,000) sq. ft. of storage area for over twenty thousand (20,000) sq. ft. of storage area.
Bicycle: Eight (8) percent - ninety (90) percent Class 1 and ten (10) percent Class 2.

3.3.5 MIXED USE PARKING REQUIREMENTS. The total parking requirement for any mixed use is calculated as follows, except that any mixed use project which includes a large bar or dance hall shall not include the square footage of those uses in the calculation for mixed use parking requirements. The parking requirements for those uses are calculated individually based on Sec. 3.3.4.

3.3.5.1 Land Uses Sharing Common Elements. For a mixed use development, the total number of required spaces is ninety (90) percent of the sum of the amount required for each separate principal use in Sec. 3.3.4, if at least one (1) of the following criteria is met.

- A. The development has a site area of fifty thousand (50,000) sq. ft. or more; or
- B. The building(s) has a gross floor area of twenty-thousand (20,000) sq. ft. or more; or
- C. The development consists of two (2) or more lots under separate ownership.

The calculation for a mixed use development does not apply to the specific mixed uses listed in Sec. 3.3.5.2, 3.3.5.3, 3.3.5.4, 3.3.5.5, 3.3.5.6, and 3.3.5.7.

3.3.5.2 Travelers' Accommodation, Lodging. For a mixed use development where Travelers' Accommodation, Lodging is the principal land use, the total number of motor vehicle parking spaces required is the number required for the rental units, plus seventy (70) percent of the sum of the required motor vehicle parking spaces for all other uses, provided the uses are within the same building or attached in a manner which presents a unified development.

3.3.5.3 Religious Use. For a mixed use development where Religious Use is the principal land use, the total number of motor vehicle parking spaces required is the number required for the Religious Use or the sum of those required for other uses on the site, whichever is greater.

3.3.5.4 Administrative and Professional Office. The total number of motor vehicle parking spaces required for buildings used primarily but not exclusively for Administrative and Professional Office use is calculated based only on the requirement for the Administrative and Professional Office use, if the total GFA for the other land uses within the building is less than five (5) percent of the GFA of the building.

2. One (1) space for each two hundred fifty (250) square feet of GFA of the entire mall, subject to all of the following requirements.
 - a. An approved development plan for the parking and vehicle circulation and ingress/egress areas of the mall which meets current Zoning Code and Development Standard requirements for parking, landscaping, and Major Streets and Routes (MS&R) setback requirements.
 - b. No vehicular access from internal neighborhood streets.
 - c. Bicycle parking spaces at three (3) percent of the provided number of motor vehicle parking spaces, up to a maximum of one hundred fifty (150) bicycle parking spaces. Of the total number of bicycle spaces provided, twenty-five (25) percent must be Class 1, and seventy-five (75) percent must be Class 2.
- C. *Existing or New Regional Malls.* Any regional mall may calculate the required number of motor vehicle spaces using a ratio of one (1) space for each three hundred (300) square feet of gross floor area of the entire regional mall, if the following requirements are met.
 1. All parking, landscaping, circulation, and ingress and egress areas of the mall meet all current Zoning Code and Development Standard requirements.
 2. The regional mall provides alternative transportation amenities which, at a minimum, include one (1) on-site shaded public transit facility within four hundred (400) feet or less of a mall entrance.
 3. The on-site public transit facility is connected to a mall entrance with a shaded sidewalk.
 4. All free-standing commercial pads associated with the regional mall are connected to mall entrances by shaded sidewalks along a direct route.
 5. At least one (1) shaded sidewalk is provided between every street serving the project and a mall building entrance.
 6. No vehicular access from internal neighborhood streets.
 7. Bicycle Spaces. Four (4) percent of the total number of motor vehicle parking spaces provided, up to a maximum of one hundred fifty (150) bicycle parking spaces. Of the total number of required bicycle spaces, twenty-five (25) percent must be Class 1, and seventy-five (75) percent must be Class 2.
 8. A mixed use component with a peak parking requirement different from retail, such as:
 - a. A multiscreen theater with seating capacity of at least four hundred (400);
 - b. More than one (1) full-service, sit-down restaurant with seating capacity in excess of two hundred (200) and with provisions for operation outside normal mall hours; or
 - c. Other uses with demonstrable peak parking requirements different from retail.

3.3.6 EXCEPTIONS.

- 3.3.6.1 Downtown Redevelopment District. Within the Downtown Redevelopment District, the following off-street motor vehicle and bicycle parking regulations apply.

ARTICLE III. DEVELOPMENT REGULATIONS

DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

5. The space is visible and physically accessible directly from a public right-of-way or public open space and is located no more than one (1) floor level above or below grade.
6. A minimum of one (1) linear foot of seating is provided for every thirty (30) square feet of interior public open space.
7. A natural lighting source, either direct or indirect, such as skylights or clerestory windows, is provided for the space.

3.3.6.2 Bicycle Parking Requirements in Designated Districts. In the Downtown Redevelopment District and the Fourth Avenue Business District, required bicycle parking spaces may be provided either:

- A. On site; or
- B. Within the same or another block and within fifteen hundred (1,500) feet of the use, if approved by the Planning Director; or
- C. Within the right-of-way and within fifteen hundred (1,500) feet of the use, if approved by the Planning Director and the City Engineer.

3.3.6.3 Diversion of Required Parking.

- A. *Temporary Diversion.* Motor vehicle parking spaces within a vehicular use area may be used temporarily for storage or display of boats, cars, recreational vehicles, semitruck trailers, furniture, or items of any other nature, subject to all of the following conditions.
 1. The vehicular use area contains more than nine (9) spaces for motor vehicle parking.
 2. If the vehicular use area contains fewer than two hundred fifty (250) spaces, no more than ten (10) percent of the total number of vehicle parking spaces are diverted to another use.
 3. The maximum period of diversion is fifteen (15) days. The Planning Director may grant additional fifteen (15) day extensions up to a maximum of sixty (60) days per year for reasonable cause upon written request from the applicant.
 4. Spaces are not diverted to another use more than once in any calendar month.
 5. The spaces diverted are not designated or designed for use by the physically disabled.
 6. The diversion is not for the purpose of dismantling or repairing vehicles.
- B. *Diversion Other Than Temporary.* Code required parking spaces for any land use shall not be sold, leased, or otherwise diverted to another use until off-street parking provisions are secured and provided on another site satisfying all provisions of this Division. Planning Department approval is required for any proposed diversion of the vehicular use area.
- C. *Exception.* Any park-and-ride lot set aside to facilitate the use of the mass transit system may use up to a maximum of five (5) percent of the required vehicular use area.

3.3.7 **DESIGN CRITERIA.** All vehicular use areas shall comply with Table 3.3.7-I, Motor Vehicle Area Dimensions, and Development Standard No. 3-05.0.

ARTICLE III. DEVELOPMENT REGULATIONS
DIVISION 3. MOTOR VEHICLE AND BICYCLE PARKING REQUIREMENTS

2. *Historic Districts.* Land uses within a historic district may follow the location requirements of Same or Another Block (SA), unless requirements are established specific to that historic district.
3. *On-Street Parking.* For Family Dwellings, Mobile Home Dwellings, and Residential Care Services with ten (10) or fewer residents, on-street parking spaces may be counted on a space-for-space basis toward the total required amount of parking up to fifty (50) percent. On-street parking is allowed for these Land Use Classes only if such parking is located on the same side of the street as the use and does not extend beyond the street frontage of the subject property.

3.3.7.2 Motor Vehicle Parking Space Dimensions.

- A. *Standard Parking Space Size.* All motor vehicle off-street parking spaces, with the exception of those listed in Sec. 3.3.7.2.B and Sec. 3.3.7.2.C, shall have a minimum width of eight and one-half (8½) feet and a length of eighteen (18) feet, excluding the area necessary for access drives and aisles. All parking spaces and necessary access drives and aisle areas shall be provided off street. Table 3.3.7-I lists the minimum dimensions. (See Illustration 3.3.7.2.)
- B. *Parking Space Size for the Physically Disabled.* The standard parking space for the physically disabled shall be provided as required by the Uniform Building Code, as amended.
- C. *Exceptions.*
 1. *Compact-Sized Parking Spaces.* Motor vehicle parking spaces sized for compact vehicles are allowed only within the Downtown Redevelopment District. The number of compact-sized parking spaces may not exceed thirty-five (35) percent of the total number of parking spaces provided. Spaces required to serve hotels, motels, and residential units shall not be compact sized. In mixed use projects, the parking spaces required to serve hotels, motels, or residential units may not be used in calculating the number of permitted compact-sized spaces.
 2. *Commercial Vehicular Use Areas.* The striping and stall size requirements of this Division do not apply to commercial vehicular use areas within the Downtown Redevelopment District, except when parking spaces are leased or otherwise set aside to satisfy the off-street parking space requirements for other land uses.
 3. *Motor Vehicle Display or Storage Areas.* The striping requirements of Development Standard No. 3-05.0 do not apply to vehicular use areas that are used to display or store motor vehicles.

**DEVELOPMENT STANDARD No.**

2-09.0

Relating to:

BICYCLE PARKING FACILITY DESIGN REQUIREMENTS

May 9, 1990

Effective date

Page 1 of 11

This Standard has been reviewed as required by Administrative Directive 1.02-9 Procedures for the Establishment of Development Standards and Policies (Development Standard 1-01.0).

The Tucson Zoning Code, Article IV, Off-Street Parking, requires that bicycle parking be provided. This Standard provides design guidelines for bicycle parking facilities.

The Planning Director and the Transportation Director will review this Standard annually or as necessary.

William D. Vento
Planning Director

6/12/90
Date

Heidi E. Davis
Transportation Director

6/14/90
Date

for Thomas J. Wilson
City Manager

6-18-90
Date

**DEVELOPMENT STANDARD No.** 2-09.0

Relating to:

BICYCLE PARKING FACILITY DESIGN REQUIREMENTS
REVISION HISTORY

May 9, 1990

Effective date

Page 1A of 11

Revision Dated April 12, 1991

This amendment to Development Standard 2-09.0, Bicycle Parking Facility Design Requirements, was prepared to clarify language concerning double parking stalls.

William D. Voth
Planning Director4/9/91
DateHenry J. Garcia
Transportation Director4/10/91
DateThomas J. Wilson
City Manager4-11-91
Date

**DEVELOPMENT STANDARD No.**

2-09.0

Relating to:

**BICYCLE PARKING FACILITY DESIGN REQUIREMENTS
REVISION HISTORY**

May 9, 1990

Effective date

Page 1B of 11

Revision Dated July 6, 1992

This amendment to Development Standard 2-09.0, Bicycle Parking Facility Design Requirements, was prepared: (1) to revise definitions within this Standard to correspond with Article IV, Motor Vehicle and Bicycle Parking Requirements (Ordinance No. 7858), adopted by the Mayor and Council on July 6, 1992 and to relocate them to the Glossary section of this book; (2) to revise references to sections in Article IV; (3) to amend Section 8.0, Modifications and Appeals, to correspond with the Administrative Directive 1.02-9 (Development Standard 1-01.0, Procedures for the Establishment of Development Standards); and (4) to update the text to include "section" headings throughout the Standard.

J. Evans
Planning Director

8/13/92
Date

Henry J. [Signature]
Transportation Director

8/17/92
Date

Ruben Suarez
City Manager

8/25/92
Date

8.0 MODIFICATIONS AND APPEALS

8.1 Modifications

8.2 Appeals

9.0 EXHIBITS

- I. Self Securing Bicycle Racks
- II. Operator Secured Bicycle Racks
- III. Facility Layout

2.3 Class 2 -- Short-Term Bicycle Parking

The facility provides a stationary object to which the operator can lock the bicycle (refer to 6.3 and Exhibits I and II).

3.0 ACCESS TO BICYCLE PARKING FACILITY

3.1 Bike Lanes

Access from a public right-of-way to on-site bicycle facilities will be provided.

3.2 Pedestrian Sidewalks

The bicycle access through the development will be separate from pedestrian ways. Vehicular access may be used as bicycle access. Bicycle access to a parking facility may cross a pedestrian way at a right angle.

4.0 PARKING LOCATION

All required bicycle parking facilities will be located on-site with access both to the public right-of-way and with pedestrian access to the main entrance of the principal use. Employee bicycle facilities may be separated from patron bicycle facilities.

4.1 Proximity to Main Entrance

Class 2 bicycle parking facilities will be conveniently located to the main building entrance(s).

4.2 Employee Parking

Class 1 bicycle parking facilities will be located as reasonably as possible for the convenience of the employee.

4.3 Separation from Automobile Parking

Bicycle parking facilities will be separated from vehicular parking and drive areas by a barrier or sufficient distance to prevent damage to the parked bicycles.

6.1 Bicycle Parking Space Dimensions (Cont'd)

- C. A minimum of ten (10) inches will be provided between a bicycle parking space and a wall or other obstruction unless the spaces are in a single row along the wall.

6.2 Aisle Width

A five (5) foot wide access aisle measured from the front or rear of the seventy-two (72) inch long parking space will be provided beside each row or between two (2) rows of bicycle parking.

6.3 Anchoring and Locks

The bicycle supports will accommodate:

- A. Locking the frame and both wheels to the support with a U-shaped shackle lock if the front wheel is removed.
- B. Locking the frame and one wheel to the support with a U-shaped lock if both wheels are left on the bicycle.
- C. Locking the frame and both wheels to the rack with a chain or cable not longer than six (6) feet without removal of the front wheel.

6.4 Lighting

Lighting will be provided in a bicycle parking area such that all facilities are thoroughly illuminated and visible from adjacent sidewalks or parking lots, during hours of use.

6.5 Covering for Class 1 Parking

Covering for Class 1 bicycle parking facilities may include any durable material that provides shade protection.

6.6 Parking Area Delineation

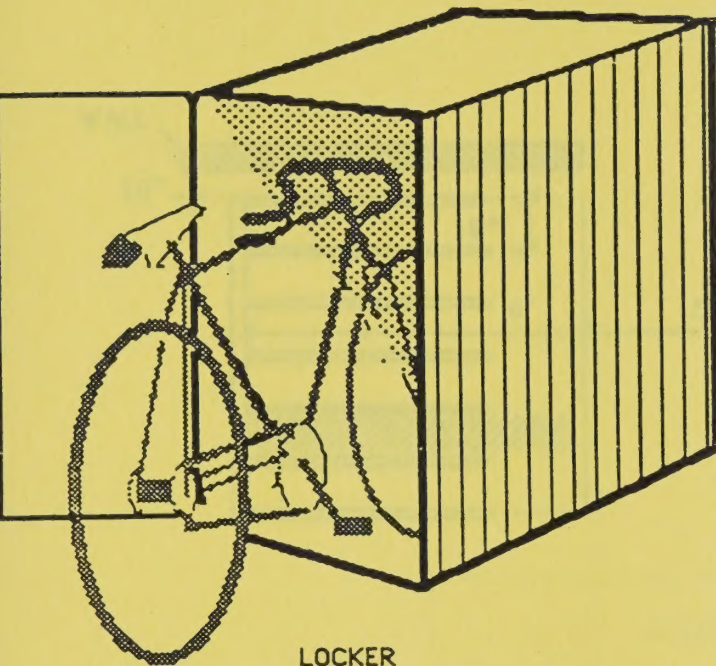
The parking area will be delineated by striping, curbing, or by other equivalent method.

7.0 FACILITY MAINTENANCE

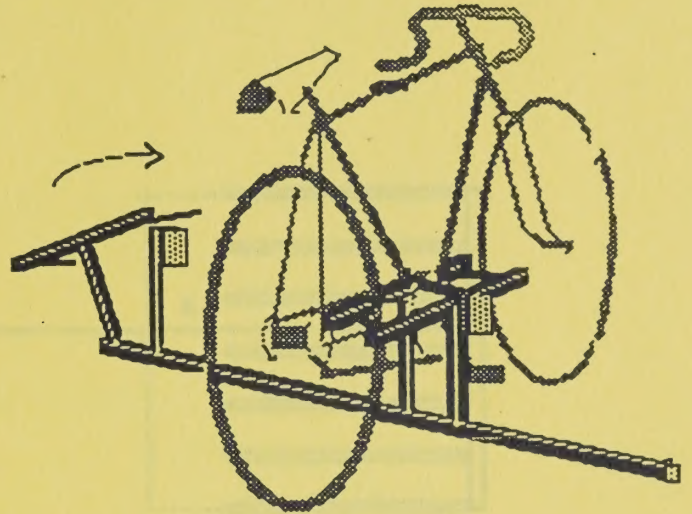
All bicycle parking facilities will be maintained in a manner which accommodates the use for which they are required.

EXHIBIT I

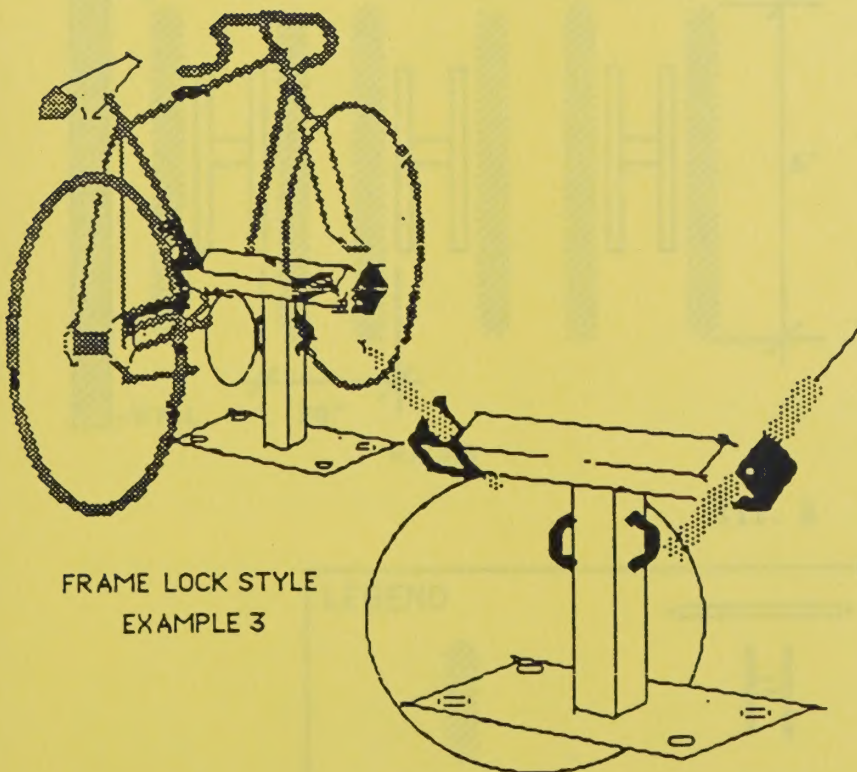
Self Securing Bicycle Racks



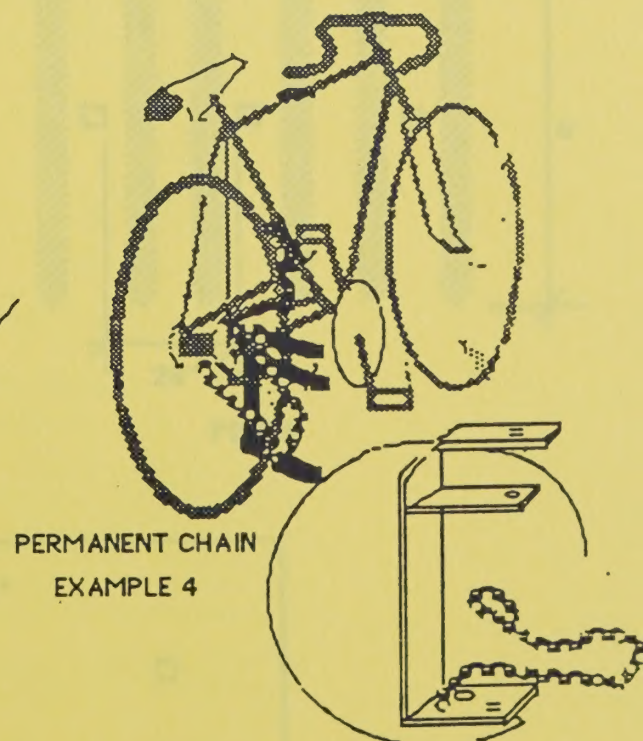
LOCKER
EXAMPLE 1



MOVABLE ARM
EXAMPLE 2



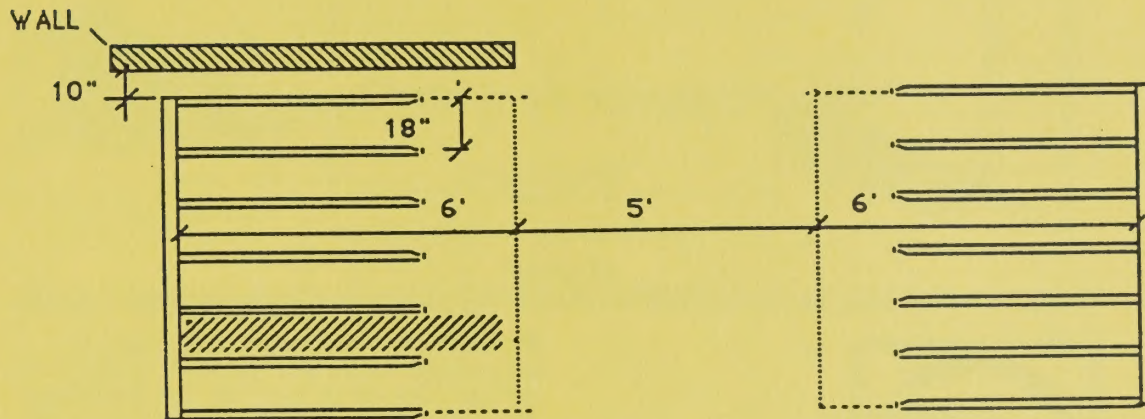
FRAME LOCK STYLE
EXAMPLE 3



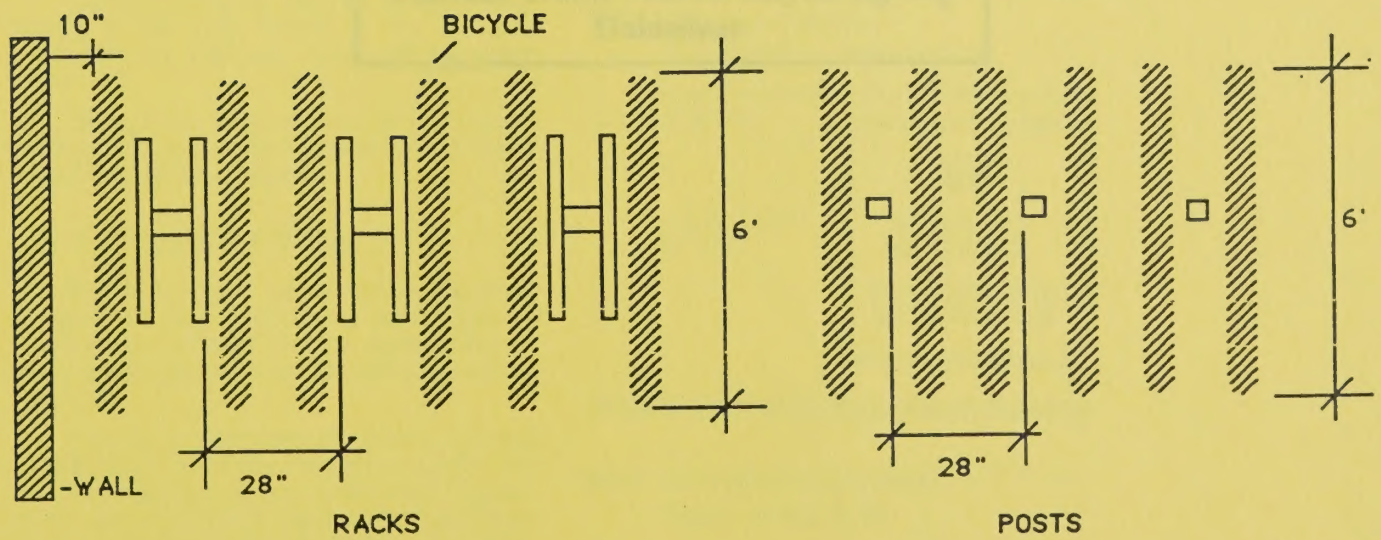
PERMANENT CHAIN
EXAMPLE 4

EXHIBIT III

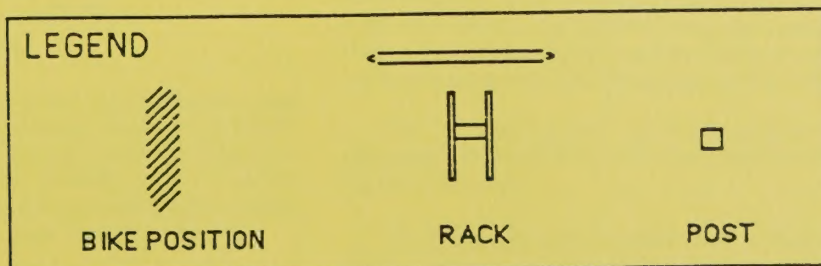
Facility Layout



RACKS
III. A



III. B



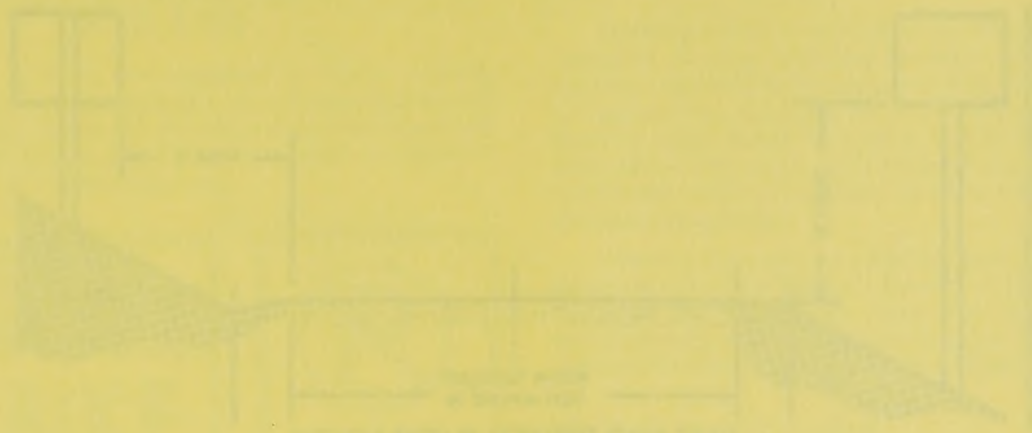


FIGURE 20
SIGN PLACEMENT OVER TOP

The sign placement shown in this part of the manual shall be considered minimum. An approach for all types of bicycle facilities where signs shown in other parts of this manual are intended for exclusive bicycle use, whether such signs represent specific information or otherwise, shall be considered. Signs are also available for use on the same facility with signs for motor vehicles, where such signs are and provided for by a particular sign.

The sign showing such information shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

A sign shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

10-4 Regulatory Signs

Regulatory signs are to inform, regulate, prohibit, and restrict the use of a facility, and indicate the applicability of that regulation that would be otherwise enforceable.

Regulatory signs shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

10-5 Bicycle Prohibition Signs (10-5-1)

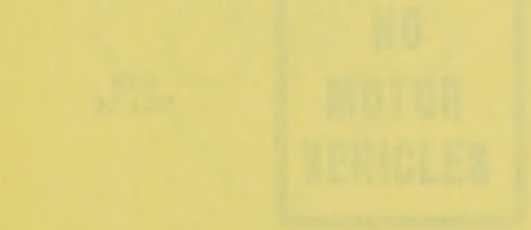
This sign is intended to be used in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

The sign shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

Appendix C

Caltrans Traffic Manual Bicycle Signing Guidelines

The sign shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.



10-6 Bicycle Restriction Signs (10-6-1 & 10-6-2)

This sign is intended to be used in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

The sign shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

The sign shall be placed in the same manner as the sign for the facility, where such signs are provided for by a particular sign.

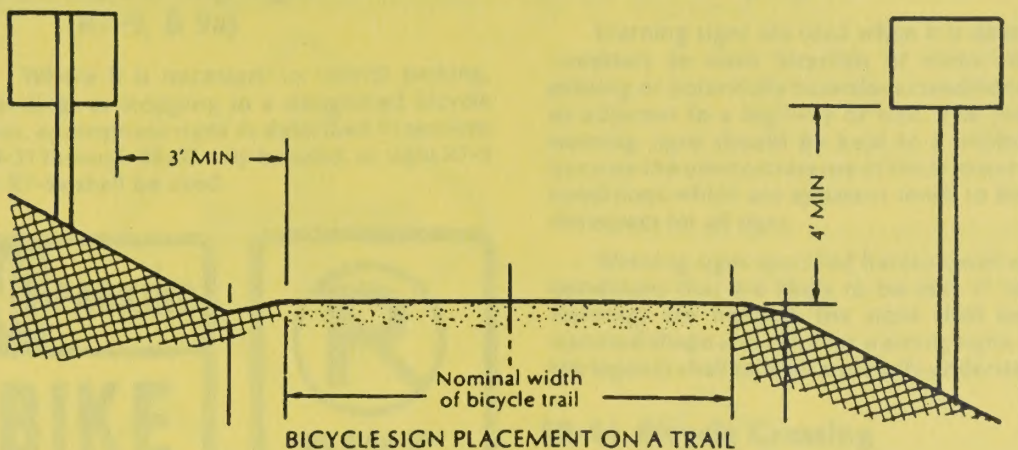


Figure 23

The sign dimensions shown in this part of the Manual shall be considered standard for application on all types of bicycle facilities. Where signs shown in other parts of this Manual are intended for exclusive bicycle use, smaller sign sizes from that specified may be used. Incremental increases in special bicycle facility signs are also desirable to make the sizes compatible with signs for motor vehicles, where both motorists and bicyclists benefit by a particular sign.

The sign lettering shall be in upper-case letters of the type shown in the Standard Alphabets for Highway Signs and Pavement Markings.

All signs should be reflectorized for bicycle trails as well as for shared roadway and designated bicycle lane facilities.

9B-4 Regulatory Signs

Regulatory signs are to inform bicyclists, pedestrians, and motorists of traffic laws or regulations and indicate the applicability of legal requirements that would not otherwise be apparent.

Regulatory signs normally shall be erected at the point where the regulations apply. The sign message shall clearly indicate the requirements imposed by the regulations and shall be easily visible and legible to bicyclists and where appropriate, motorists and pedestrians.

9B-5 Bicycle Prohibition Sign (R5-6)

This sign is intended for use at the entrance to facilities, such as freeways, where bicycling is prohibited. Where pedestrians and motor-driven cycles are also prohibited from using these facilities, it may be more desirable to use the R5-10a word message sign (sec. 2B-28).

In reduced size (18 x 18 inches), this sign may be used on sidewalks where bicycle riding is prohibited.

R5-6
24" x 24"



9B-6 Motor Vehicle Prohibition Sign (R5-3)

This sign is intended for use at the entrance to a bicycle trail.

R5-3
24" x 24"



9B-7 Bicycle Restriction Signs (R9-5 & 6)

This series of signs is intended for use where pedestrian facilities are being used for bicycle travel. They should be erected off the edge of the sidewalk, near the crossing location, where bicyclists are expected to dismount and walk with pedestrians while crossing the street.

The R9-5 sign may be used where bicycles can cross the street only on the pedestrian walk signal indication.

The R9-6 sign may be used where bicycles are required to cross or share a facility used by pedestrians and are required to yield to the pedestrians.

9B-11 No Parking Signs (R7-9, & 9a)

Where it is necessary to restrict parking, standing, or stopping in a designated bicycle lane, appropriate signs as described in sections 2B-31 through 2B-33 may be used, or signs R7-9 or R7-9a shall be used.



R7-9
12" x 18"



R7-9a
12" x 18"

9B-12 Lane Use Control Signs (R3-7, R4-4)

Where right-turning motor vehicles must merge with bicycle traffic on designated bike lanes, the R3-7 and R4-4 signs may be used. The R4-4 sign is intended to inform both the motorist and the bicyclist of this merging maneuver. Where a designated bicycle lane is provided near the stop line, an R3-7 sign may be used to prevent motorists from crossing back over the bike lane.



R4-4
36" x 30"



R3-7
30" x 30"

9B-13 Warning Signs

Warning signs are used when it is deemed necessary to warn bicyclists or motorists of existing or potentially hazardous conditions on or adjacent to a highway or trail. The use of warning signs should be kept to a minimum because the unnecessary use of them to warn of conditions which are apparent tends to breed disrespect for all signs.

Warning signs specified herein cover most conditions that are likely to be met. If other warnings are needed, the signs shall be of standard shape and color for warning signs, and the legends shall be brief and easily understood.

9B-14 Bicycle Crossing Sign (W11-1)

The Bicycle Crossing sign is intended for use on highways in advance of a point where a bikeway crosses the roadway. It should be erected about 750 feet in advance of the crossing location in rural areas where speeds are high, and at a distance of about 250 feet in urban residential or business areas, where speeds are low.

If the approach to an intersection is controlled by a traffic control signal, stop sign or yield sign, the W11-1 sign may not be needed.



W11-1
30" x 30"

9B-15 Hazardous Condition Sign (W8-10)

The Hazardous Condition sign is intended for use where roadway or bicycle trail conditions are likely to cause a bicyclist to lose control of his bicycle. These conditions could include slippery pavement, slick bridge, decking, rough or grooved pavement, or water or ice on the roadway. The W8-10 sign may be used with a supplemental plaque describing the particular roadway or bicycle trail feature which might be of danger to the bicyclist such as SLIPPERY WHEN WET, STEEL DECK, ROUGH PAVEMENT, BRIDGE JOINT, or FORD.

9B-18 Warning Signs

Other warning signs may be required on bicycle facilities to warn riders of unexpected conditions. The intended use of these signs generally is self-explanatory. They should normally be installed no less than 50 feet in advance of the beginning of hazards.

Where construction or maintenance activity is present on bicycle trails, appropriate signs from Part VI of the Manual should be used.

W2-1
18" x 18"



W2-2
18" x 18"



W2-3
18" x 18"



W2-4
18" x 18"



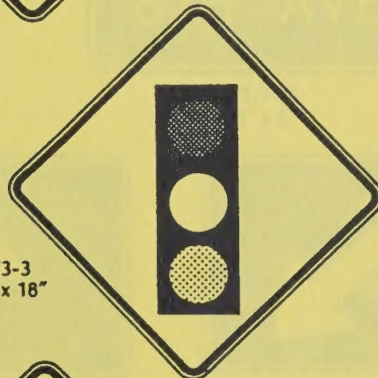
W2-5
18" x 18"



W3-1
18" x 18"



W3-3
18" x 18"



W5-4
18" x 18"



W7-5
18" x 18"



9B-22 Supplemental Plaques for Route Signs and Markers

Where desired, supplemental plaques can be used with the D11-1 and M1-8 signs to furnish additional information, such as directional changes in the route, and intermediate range distance and destination information.

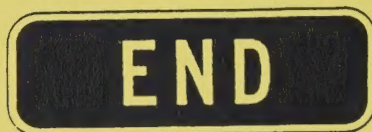
The M4-11 through M4-13 signs may be mounted above the appropriate Route Signs or Route Marker. Supplemental plaques D1-1b and c are intended for use with the D11-1 Bicycle Route Sign. The appropriate arrow sign (M7-1 through M7-7), if used, should be placed below the Route Sign or Route Marker. These signs shall have a white arrow on a green background.



M4-11
24" x 6" x 4"



D1-1b(L)
24" x 6"



M4-12
24" x 6" x 4"



D1-1b(R)
24" x 6"



M4-13
24" x 6" x 4"



D1-1(C)
24" x 6"



M7-1



M7-2



M7-3



M7-4



M7-5



M7-6



M7-7

M7-1 through M7-7
12" x 9"

Appendix D

System Overview



Willow Creek Pathway

Enhanced Crossing

Foothill Rail Trail
East Bidwell Street

Oak Avenue Parkway

Bike Path Alignment
Foothill Rail Trail near Oak Avenue
Bicycle Master Plan, City of Folsom

 Existing Class I Bike Path
 Proposed Class I Bike Path

Scale: 1" = 1,400'
Note: Proposed alignments are preliminary;
maps are for planning purposes only.



Folsom-Auburn Road

Enhanced Pathway Crossing

American River Bikeway

American River

Folsom Lake

Bike Path Alignment

American River Parkway Access
Bicycle Master Plan, City of Folsom

- Existing Class I Bike Path
- Proposed Class I Bike Path

Scale: 1" = 1,750'

Note: Proposed alignments are preliminary;
maps are for planning purposes only.



Bike Path Alignment

Blue Ravine/Riley Area

Bicycle Master Plan, City of Folsom

-  Existing Class I Bike Path
-  Proposed Class I Bike Path
-  On-Street Bikeways

Scale: 1" = 1,400'

Note: Proposed alignments are preliminary;
maps are for planning purposes only.



American River Bikeway

Lake Natoma

East Lake Natoma Path

Historic Truss Bridge

Pathway on Abandoned Railroad ROW

Bike Path Alignment

American River/Lake Natoma/

PG&E Paths

Bicycle Master Plan, City of Folsom

- Existing Class I Bike Path
- Proposed Class I Bike Path

Scale: 1" = 1,800'
Note: Proposed alignments are preliminary;
maps are for planning purposes only.

PG&E Pathway

Bike Path Alignment

PG&E / Humbug Creek Bike Paths
Bicycle Master Plan, City of Folsom

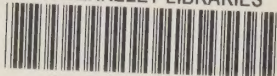
- Existing Class I Bike Path
- Proposed Class I Bike Path

Scale: 1" = 1,800'
Note: Proposed alignments are preliminary;
maps are for planning purposes only.



Appendix E

Standards for bicycle facilities during construction



0124926519